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MEMORANDA:

FROM THE

CLINICAL COURSE OF INSTRUCTION

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ART. I—*Surgical*: By Prof. WARREN STONE. Reported by
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THE cases which furnished material for the clinics of the Professor of Surgery in the University, during the past session, proved, in the result of the treatment carried out, to be so eminently illustrative of principles emanating from purely practical observation, that even an imperfect review, it is to be trusted, will not be entirely unprofitable. It has been determined to avoid, as being both unnecessary and tedious, any detailed account of each separate individual case, but rather to select certain classes of surgical diseases, of which there were presented a sufficient number to justify the establishment of some fixed principle. In addition to the material which was brought before the class, as selected from the surgical wards appropriated for the use of the University, there came under the Professor's notice, as well as my own, a number of out-patients of such deep interest in a practical way, that it has not been deemed inappropriate to incorporate a mention of them in the report.

The number of cases of hydrocele treated were, in proportion, unusually large. The tumor, especially, when of considerable size, was tapped, and the patient discharged with instruction to return as soon as the sac had become distended by the serous secretion to about half its former size. Then the operation for

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the radical cure was immediately performed. The object of first adopting what is termed the *palliative* treatment was twofold, viz: that of affording the patient the very slim chance of the dropsy not returning (and I may here remark that in no instance did this occur), and secondly, that of rendering the operation for the radical cure the more certain; for, when the remedial fluid is injected into sacs, from which a large quantity of water has just been drawn, its walls are, by the contraction of the dartos, thrown into so many complicated folds that it is quite uncertain whether, even by the most strenuous exertions, it succeeds in exerting its influence over the whole surface—which is absolutely necessary for complete success.

Now as to the fluid used for this radical cure. In every case nothing but the compound tinct. of iodine, *pure*, was used, and with invariable success. A small trocar was inserted in the ordinary manner, every drop of the water carefully drawn out, and, by means of a proper syringe, as much of the tincture as the size of the sac required was injected. No dilution was ever found necessary. Indeed, as above mentioned, it was scrupulously avoided by thoroughly emptying the tumor of its contents. The fluid once in, with the finger upon the end of the canula to prevent its escape, a most thorough kneading of the scrotum was practiced, so that every part of tunica vaginalis might be subjected to its influence. This done, the fluid was allowed to escape, and the patient directed to suspend the scrotum and keep himself at rest for several days.—During the succeeding twenty-four or thirty-six hours, the scrotum generally swelled, varying in size in different cases, sometimes almost as large as before the operation. This swelling generally lasted from two to four, or even five days, and then gradually subsided, leaving the patient perfectly cured. As a rule, the inflammation excited never progressed beyond the proper limits; when it did, the simplest means always subjugated it.

Chloroform was never used in the operation, the pain attendant upon it not seeming to justify it. By holding the canula in such a direction as to avoid throwing the current upon the cord, that severe pain running up its course and producing a sense of prostration was avoided, and the patient simply subjected to a feeling of heat in the scrotum, which always proved to be per-

fectly bearable, and rarely ever lasted more than half an hour at the farthest.

As to the question whether the injection should be used when the testicle is in a state of chronic or even sub-acute inflammation, or whether means to reduce either stages of the inflammation should be adopted before its use. Although in quite a large proportion of the cases both chronic and sub-acute inflammation of the testicles existed, this complication was not considered an impediment to the operation; indeed I will say, that instead of its producing any unfavorable results, the effect upon the organ seemed to be, if anything, beneficial; it always appeared in a marked manner to hasten return to the natural state. It is true that in a certain number of these cases a gentle mercurial course was adopted, but the rapid change from disease to health contrasted so favorably with that occurring in simple chronic uncomplicated cases of inflammation of the testicle, that it does not seem injudicious that we should allow a good share of the benefit to be appropriated by the iodine injection.

There occurred but one case of hydrocele of the cord. This happened with an old man aged 70 years, who was also suffering with the same trouble of the tunica vaginalis. Both tumors were punctured at the same time, and injected as above mentioned with perfect success.

Organic strictures of the urethra were treated on the plan of gradual dilatation. In some few, but very few, cases of old, indolent strictures, with but little sensibility, forcible dilatation was practiced; but in every case of this sort the subsequent use of the smooth, conical-pointed, metallic bougie was never neglected, it being considered absolutely necessary for the permanent cure. But, as I have said, such cases constituted a very small per cent. of those which came under observation, I can therefore assert that the rule of treatment was that of gradual dilatation.

Now as to the manner of using the instruments, the rapidity with which the size was increased, and the little adjuvants used. Where the stricture was so tight as to offer considerable resistance to the passage of the smallest size, and withal sensitive, no forcible effort to effect a passage was made. The patient was put

upon equal parts of tartar emetic and morphia in the evening, and the medicine pushed until nausea ensued; an early breakfast ordered, and the same course begun several hours after the meal; a warm hip-bath administered and then the attempt made. With this course a passage was almost always effected. Once through, the same instrument was introduced every other day, until it was found to pass without difficulty and without giving pain to the patient. A size larger was then used, but with great care, proper attention being paid that no undue amount of pressure should be made upon the strictured point. It was always kept in view, the amount of wedge power exerted by the instrument, and its comparatively easy passage was not permitted to influence a too rapid increase in the size. The stream of urine was frequently observed to be gradually increasing in size under the use of the same instrument, when either at the patient's solicitations or our own impatience an inadvertent change would, by making unwholesome pressure, produce bad effects and throw the case back several weeks. In those cases of excessive irritability, prone to engorgement, etc., much advantage was derived from injections of solution of nitrate of silver, ranging in strength from five to ten, fifteen or even twenty grains to the ounce of water.

Where the patient was forced to rise a number of times during the night to urinate, and this accompanied with pain, much relief was obtained from either an opium suppository or an anodyne enema administered at bedtime. In such cases I will also mention the great assistance afforded by the use of the tartarized antimony and morphia, administered as before mentioned. In a few cases of very recent strictures mercury, given in small quantities and pushed until its specific effect was obtained, seemed to do good.

There were several cases admitted into the wards suffering from stoppage of the urine, as a result of sudden engorgement of an old stricture, resulting from excess in drinking, or venery, or unusual exposure to the weather. Upon inquiry, it was found that they all had had strictures of gonorrhœal origin for several years, had been under treatment at various times, but from that peculiar improvidence that seems to characterize certain classes, had as often abandoned it, being content so long as the bladder

could be emptied. In these cases, instead of making efforts as violent as they would have been futile, to force a catheter into the bladder, the following means were adopted: All instrumental interference was avoided; tartar emetic, hip-baths, etc., were used, and in every case in a short while the urine began to dribble. In a few days the stricture recovered its former calibre, and was in the best condition for the treatment of gradual dilatation.

In several instances there came under observation, patients who, suffering as above mentioned, had been subjected to the violent use of instruments before admission into the hospital, thus offering an opportunity of establishing a comparison. In the first place, it was seldom that a passage was effected, and even in those in whom catheterism was successful, the same stoppage occurred, and forced them into the hospital, when the course just mentioned was adopted, and permanent relief was always secured.

As to the length of time that the instrument, when used, was allowed to remain. If the first unpleasant sensation accompanying its introduction increased to positive pain, it was always immediately withdrawn, it having been observed to be productive of positive evil, even when the patient gave assurance that though painful it was bearable. If no pain was complained of, or rather if the first painful sensation disappeared, it was allowed to remain for fifteen, twenty, or thirty minutes. The practice of keeping the instrument in for twenty-four or thirty-six hours was not practiced, on the contrary, it was most earnestly deprecated. Patients were never discharged without being particularly instructed as to the very strong probability of a return of their malady, and were ordered a proper sized instrument to be used by themselves, as soon as they observed any change in the caliber of the stream of urine. Little difficulty was experienced in teaching them the use of the instrument.

No case occurred which called for external division of the stricture, generally called Syme's operation. The efficiency of this operation when followed by the subsequent persevering use of the bougie, is fully recognized, and had any cases to which it is peculiarly adopted presented themselves, it would have been performed without hesitation.

All the cases of stricture were of gonorrhœal origin, and for the most part situated in the membranous portion of the urethra. There was but one case of traumatic origin. This happened with a carpenter who fell astride a narrow board and ruptured the urethra. As is always the case, his stricture proved the most obstinate, but was finally overcome.

Fistula in ano (complete), was treated by the knife, especial care being taken that the original opening in the bowel should be found, and not an artificial one made by the point of the probe, which is quite an easy matter, unless proper care is observed. This finding of the original opening in the bowel, and cutting from it through the sphincter muscle was looked upon as absolutely essential to the cure. Several cases were admitted that had been operated on previously without success,—and this mishap was attributed to this piece of neglect. It was never deemed necessary to cut higher than the opening in the bowel, even when the sinus was found to have burrowed some distance above it. No difficulty was experienced in any of the cases—the wound being so treated as to cause it to fill from the bottom—rapid recovery took place.

Hæmorrhoids (internal) were treated by the ligature. In applying the ligature it was made an object to place it as high up as possible—even in the largest sized hæmorrhoidal tumors, it was never found necessary to apply more than three, scarcely ever four ligatures. When the slough came off, if any points of ulceration were left, causing the patient uneasiness and much straining at stool, relief was generally obtained by injections of one part of Labarraque's solution of chlorinated soda to eight or ten of water.

Syphilis in its various stages occurred in large proportion. The primary sore, when *soft* in nature, was always treated as a simple local disease. The application of caustic with the idea of destroying the virus was never used, it being considered useless. When used at all, it was upon the same principle that would have suggested it in any other ulcer.

Buboes when suppurating, were freely opened as soon as pus was detected, as would have been done in any ordinary abscess.

In the larger proportion of cases with soft chancres no con-

stitutional symptoms manifested themselves, but in some there is no question that such *did occur*. Now, whether the chancre was at first indurated, and then before the patient came under observation changed its character, cannot be positively determined, for very little reliance can be placed upon the testimony of any patient, much less such as come to the hospital for treatment. However, it does seem rather singular that in this country, where indurated chancres have gotten to be almost the exception, there should be so many suffering from the disease in its secondary and tertiary forms. But, as no discussion on this point is contemplated, I will simply say that be the matter as it may, one thing is certain—observation has shown that in the true, genuine soft chancre, mercury, the great syphilitic specific, so-called, not only aggravates the local trouble, but does not give any immunity from constitutional effects, if such are to ensue. Several opportunities were afforded for observing its sad effects, and they were the very worst cases we had to treat. Such applications as the nature of the ulcer seemed to require were used upon the same principle as would hold good in any simple ulcer.

There were only two cases of indurated chancre admitted. Both were seen at the onset of the disease. In each case mercury was used until gentle pytalism ensued, and then the iodide of potassium. The glands in the groin swelled and were peculiarly painful to the touch, but did not suppurate. One of the two cases was detained in the hospital, by an attack of fever, for several weeks after the chancre had healed and the buboes subsided. Although, as I have said, his case came under treatment almost immediately after the disease manifested itself, six weeks after he presented evidences of constitutional symptoms in the shape of quite a number of coppery blotches on his forehead, a little beyond the roots of his hair. In less than a week the same appeared on his chest and arms. It was believed at the time, and the same opinion is still entertained, that it was reasonable to attribute this to his illness, which was so severe as to lower his vitality very much, thus depriving nature of her ability to throw off the poison, with which power, when properly and judiciously assisted, she is fully credited. By taking means to restore his general health, and at the same time using mercurials and the

potash salts, with great care and in small quantities, he very soon was able to leave the hospital without any evidence whatever of syphilitic taint.

Secondary syphilis manifested itself in such a variety and in so many complicated forms of eruption, that it will only be spoken of in general terms. Every patient who was admitted with an eruption on the skin, scaly, pustular or otherwise, and who had at some time had a sore on his penis, was sure to answer, when asked what was the matter, that he had "secondary." If the character of the eruption excited suspicion, and upon thorough examination it was found that it had shown itself during a period not exceeding six months subsequent to the primary sore, and further that it had made its appearance first upon the forehead and then gradually extended to the trunk and limbs, it was looked upon as constitutional syphilis and so treated. In making the examination and arriving at a conscientious conclusion, great stress was laid, in the first place, upon the time that had elapsed between the first appearance of the chancre and the occurrence of the eruption. If it exceeded six months, it was not looked upon as syphilitic; in the second, which part of the body was first attacked—if the forehead and then the limbs and trunk, it was considered syphilitic, other things being equal. I have repeated these two points of diagnosis that the importance with which they are invested might be brought forward more prominently. So much value was placed upon them that, when the eruption was so unquestionably characteristic as to challenge all doubt, and the patient's history did not correspond with what has been above stated, he was freely credited with a misstatement, arising either from ignorance or want of observation.

To speak in general terms of the treatment adopted in this form of syphilis, I will say, that mercury seemed to agree far better in the scaly form of eruption than in the pustular; in fact it was rarely ever used in the latter. In either case, however, special pains were taken to restore the general health, it being considered absolutely necessary for any permanent result. Whenever mercury or iodide of potassium was used, it was administered in such a way as not to disturb the general functions.

As has been above mentioned, the system was considered per-

fectly capable, in a large proportion of cases, of ridding itself of the poison, if proper care was taken that the machinery worked in perfect harmony. With this idea in view, many cases of undoubted constitutional syphilis were treated and cured without a dose of what is generally deemed specific remedies. In those cases where neither mercury or the iodide of potassium was deemed expedient, the chlorate of potassa combined with the muriated tinct. of iron was used with the best results. The potassio-tartrate of iron also answered an excellent purpose. Good diet, cod-liver oil, malt liquors, the hypophosphites, and everything calculated to place the general system at the proper standard of health.

As for the tertiary form of the disease, I will simply mention it as manifesting itself in the shape of periosteal inflammation. A large number of cases of this kind were treated and in the following manner: From a grain, to a grain and a half of calomel, night and morning, combined with a small proportion of opium was administered until the gentlest possible specific effect was obtained. The iodide of potassium was then given in doses varying from two a half grains to five grains, three times a day, either combined or not, as the case seemed to require, with some tonic. The dose of the iodide of potassium was never increased beyond five grains. When the tenderness of the gums subsided—the iodide of potassium being continued—a grain, sometimes half a grain, of calomel was given at night, and kept up until slight pytalism again ensued. It was then stepped, only to be repeated in due time. This simple plan was continued until every evidence of disease disappeared, and in every case the result proved to be permanently successful. The iodide of potassium was never used in the large quantities that have been advised for the relief of the severe nocturnal pains which accompany this form of inflammation. A large proportion of the patients who came under observation had been subjected to the use of these large doses of the iodide, but while confessing that they derived some relief from their pains, acknowledged that it was but temporary, and much to the detriment of their general health.

It was more especially in this form of syphilitic inflammation that mercury seemed to exert its most striking and best effects.

Patients who, in outward appearance, seemed the last subjects of mercury—pale, emaciated, scarcely able to walk, dreading night-fall with the same degree of horror as the dying sinner his lot in eternity—when put upon and under the use of small doses of calomel, would, as it began to exert its influence, improve in color, nutrition and strength; while the severe nocturnal pains, which even the most immoderate use of opium failed to control, disappeared almost entirely.

With the idea already referred to, that the syphilitic poison sapped the constitution, just as malaria or any other intangible poison does, due attention was paid to the restoration of the general health.

Nodes, when soft, even giving a sense of fluctuation that seemed to indicate the presence of pus, were never opened; it having been observed that under the treatment above mentioned, they generally took much better care of themselves when not troubled with the knife.

Blisters were never used, nor was the tincture of iodine—neither was looked upon as beneficial, although they might be harmless. What seemed to give the most relief, was the enveloping of the affected part in a towel previously soaked in cold water, and then covering this with a dry one, the whole to remain on during the night. In some cases a teaspoonful of laudanum was poured upon the wet towel, and did much towards calming the pain.

To sum up the whole in a few words, those suffering with constitutional syphilis were looked upon as being impregnated with a poison, which was only to be permanently expelled by the maintenance of the powers of nature, and not by the indiscriminate use of specifics. Whenever it was deemed expedient to use either mercury or the iodide of potassium, it was given in such quantities and guarded by such scrupulous precautions, that no interference with the natural functions should occur.

In selecting for use from the salts of mercury, preference was given to calomel, it being considered more certain, safe and capable of being better managed. Where a slow, gradual effect was desired, the bichloride was sometimes used with very good effect, in doses varying from a sixteenth to a thirty-second of a grain two or three times a day.

Gonorrhœa, when seen at the very onset, was treated with balsams combined with appropriate mild injections. If some days had elapsed, the balsams were never resorted to. The treatment consisted simply of injections, proper attention of course being paid to the general condition. Strong injections were never resorted to. The one most generally used consisted two grains of tannin, and a drop of dilute nitric acid to the ounce of distilled water.

Gleet, when of long standing, was treated by injections of solutions of nitrate of silver, varying in strength from five to fifteen- or twenty grains to the ounce of water, tonics, the muriated tincture of iron, etc. The solution was injected by means of a catheter syringe, having one small pin hole at its very extremity, and not on the side, as is generally the case. The point of irritation was generally found to be about the prostatic portion of the urethra, and to that spot a few drops of the solution were applied every day. As a rule, not more than three or four injections were required.

There were treated fractures of the humerus, ribs, femur and tibia. Fractures of the humerus were treated simply by the application of pasteboard splints on the outer and inner sides of the arm, the hand resting in a sling, the elbow allowed to hang free, so that proper extension might be made. No trouble was experienced in obtaining good results.

Fractures of the ribs were treated by the firm application of a broad strip of adhesive plaster around the thorax, to control the movements of the fragments, by securing, as far as was possible, abdominal respiration. Several cases had pleural complications, but the ordinary treatment soon disposed of it.

Fractures of the femur, when occurring in the lower two-thirds of the bone, were treated by Liston's straight splint, modified by a small horizontal foot-piece placed at right angles to it; from which extension was made by means of adhesive plaster attached to the leg, counter extension being exerted by an ordinary perineal band. In fractures of the upper third Smith's anterior splint was used, with excellent results; in fact, the greatest preference was given to this splint in fractures of this region. The proper amount of extension was always obtained, the fragments

kept in the best apposition, and more comfort afforded the patient than was ever obtained by any other apparatus. One case especially, with a distinctly oblique fracture a little above the middle of the upper third, recovered with so little shortening, that, with the sole of the boot on the affected side a shade thicker, his lameness is scarcely perceptible, except by the closest scrutiny. Starched bandages were not used much, except where it was of real importance that the patient should have exercise in the open air.

Fractures of the tibia were, for the first week or two, treated by what might be called a pillow splint. This consisted of a moss pillow well stuffed, and so scooped out as to leave a place for the limb to rest in, ordinary wooden splints being placed on each side of the pillow. The whole was made firm by tying it up with pieces of tape or bandage. This was found to be a most excellent and comfortable apparatus. It was used in preference to the fracture-box for this reason: it is light, and when the patient moves the limb, the whole moves together, and there is no jostling of the fractured ends, as would be the case in the cumbersome fracture-box. In due time the starched bandage and pasteboard splints were applied, and crutches furnished. In none of the cases did there appear any disposition to much displacement of the fragments. As a rule, the stereotyped plan of soaking the fractured limb either in cold water or some evaporating lotion, and continuing it for days, was not adopted. It was considered in a large majority of cases unnecessary, if not even detrimental. A certain amount of inflammation is to be looked for; upon it depends the cure; it is not apt to progress beyond the proper limits, unless the injury to the soft parts be more serious than is ordinarily the case in simple fractures, or there be something in the patient's system that predisposes to excessive action; and it seems obvious that means calculated to subdue that proper action which nature in her providence sets up, cannot do good. But even if no serious material harm is avoided by abstinence from lotions; at least the patient is saved the blistering and subsequent soreness of the skin which so frequently follow their use, rendering the application of the necessary splints uncomfortable if not positively painful.

When from nervous irritability the muscles of the affected limb became rebellious, and were constantly twitching in every direction, no effort at forcible extension was made, it being considered perfectly futile. The limb was placed, free from any apparatus, in a position most comfortable to the patient, and attention paid to the general condition. All the means calculated to equalize the nervous system were assiduously resorted to, and not until this object was attained was mechanical interference resorted to.

Generally the patients that came into the hospital were of that class whose vital powers were not at a very high standard. Although apparently stout and vigorous, when the system was called upon for reparative action,—nature gave ample testimony as to the heavy drafts upon her storehouse, to pay the penalty of their various excesses and reckless exposures. These patients, when suffering from fractures, were watched very closely, and if in from three weeks to a month that degree of union which should take place in that time had not occurred, means were taken to promote it. It was not waited for to see if perchance it might take place. Small blisters, repeated in rapid succession, were applied over the fractured point. Cod-liver oil, the hypophosphites, frequently the simple phosphate of lime, malt liquor, etc., were administered. Under this course ossification always took place rapidly, in point of fact, in some cases, it appeared to do so more rapidly than generally occurred under more favorable circumstances. It is quite certain that, had such patients been passed by carelessly, they would have remained for months without union, the long and tedious confinement lessening every day their chances for recovery.

There was but one case of compound fracture treated. This was of the tibia in its lower third, and, though, simple at first, it became compound, owing to the sloughing of the soft parts over the fractured point. It was treated at first with the pillow splint; then the excessive discharge necessitated the use of the fracture-box with bran,—and subsequently the starched bandage. Perfect union has taken place, and though no effort at extension was made, there will be but little deformity.

This case was one of the deepest interest, not so much on account of the fracture as the serious complication which accom-

panied it. He had been an habitual drinker for many years, and had on two previous occasions had slight attacks of delirium tremens. For two weeks before the receipt of his injury, he had been drinking to great excess, and had taken but little nourishment for three or four days, almost living upon alcohol alone. He was seen the morning after admission into hospital, having been brought there during the night,—and immediately ordered twelve grains of calomel and bicarbonate of soda, in broken doses of two grains every half hour. The next morning it had acted so very freely that it was not considered necessary to administer the usual saline, as sufficient disgorgement had taken place. Beef-tea, eggs, milk, etc., were given, and he took quite an allowance with apparent relish. Notwithstanding this favorable turn, he manifested towards evening symptoms of delirium; but they were mild, and as he had been thoroughly disgorged and had taken nourishment, it was not feared that it would assume a serious form. Of one grain of tartarized antimony and morphia in four ounces of camphor water, a tablespoonful was ordered to be given every two hours. Although the first three doses seemed to quiet him and promised the securing of a good night's rest, he grew gradually worse during the night, and by morning was so perfectly furious as to require the use of the straight jacket. When seen at the morning visit, at nine, A. M., his pulse could scarcely be counted, and despite his shackles, it required the united strength of three stout men to prevent the entire demolition of his injured limb.

The solution of tartar emetic and morphia was stopped, and the inhalation of chloroform, carefully guarded, was resorted to, but only to be almost immediately abandoned, as it threw him into violent spasms and rendered him nearly pulseless. He was then at once ordered an ounce of tinct. digitalis, of which a teaspoonful was to be given every two hours, until sleep was procured. It was neck or nothing with him, and there was no hesitation felt in giving such directions. He was seen at eight o'clock in the evening, just after the sixth teaspoonful had been given. His pulse had subsided remarkably, being scarcely 90, skin and tongue pleasantly moist, and his mind much clearer. He was perfectly docile, and answered questions intelligently. He said

he felt an inclination to sleep, and directions were given to his nurse to discontinue the digitalis so long as he remained quiet, but to resume its use as before should he evince any of his former symptoms. At half-past eight he fell into a pleasant slumber, which lasted until towards morning, when he awoke, as the nurse stated, quite restless, and was given the seventh dose. When seen at nine, A. M., he was in a calm, natural sleep, with a good, full, natural pulse, and so continued until late in the evening; then again becoming restless and wayward, the last remaining dose was given. This finished the business. His sleep during the night was undisturbed, and lasted until the afternoon of the next day, when he awoke perfectly rational and called for nourishment. His pulse could not have been better, the skin was pleasant, tongue moist, bowels sufficiently free, and the urinary secretion in perfect order. From this time no trouble was experienced with him. Under the most favorable circumstances his compound fracture could not have done better. Special reference has been made to this case, to bring prominently forward the undoubted good effects of the digitalis, as well as its perfect safety in all cases of a similar nature.

Of dislocations, there occurred cases of the humerus, hip and jaw. There was but one variety of dislocation of the humerus, viz: downwards into the axilla. The majority of the cases were recent, but there was one case of a month's standing, one of five weeks, one of six weeks, and one of three months and twenty days standing. The following was the method of reduction:

The patient was first put upon the use of tartar emetic until gentle nausea ensued, then chloroform was administered until perfect relaxation was obtained. He was placed in a sitting posture,, either in a chair or on a low couch; a wet towel was so bandaged to the arm as to leave a loop for the assistants to make extension; a sheet was put around the chest, by means of which counter extension could be exerted; and the operator proceeded with his knee in the axilla and the ball of the thumb pressed firmly against the acromion, the foot resting against the edge of the chair or couch. As soon as the proper amount of relaxation was obtained, the assistants were directed to make a slow, steady

pull, and when the contraction of the opposing muscles was overcome, by making use of the humerus as a lever, the knee being a fulcrum, the head of the bone was thrown into its natural position. This plan of reduction was the only one resorted to. The facility with which the scapula was held firm by the hand upon the acromion, and the immense lever power afforded by the shaft of the bone, were considered recommendations sufficient to accord it the preference.

The only case in which the pulleys were used was the one of nearly four months' standing. The same method of reduction was employed in this case as in the others, except the mechanical substitute, and with perfect success.

The arm was generally kept in sling for three or four days—not longer; then the patient was directed to make cautious use of it. It was found much better to have them make early movements of the joints. In none of the cases was there any subsequent inflammation, except in the old case of four months; but it was of a mild character and only lasted a short while.

There was but one dislocation of the hip, upwards and backwards on the dorsum. This was of several weeks' standing, and notwithstanding ankylosis of the knee-joint, was reduced by manipulation. It is true the knee had not ankylosed in the straight position, but was slightly flexed and twisted a little outwards. This rendered the manipulating process somewhat more easy than it would have been otherwise. Manipulation was most emphatically advocated, in preference to the pulley, in this form of dislocation, no matter of how long standing. It was considered that much more force in the proper direction could be exerted and much less violence committed.

There was also but one case of dislocation of the jaw. It was of seven week's duration, and was reduced in the ordinary way, by placing the thumbs at the roots of the coronoid processes, pressing downwards and backwards, and elevating the chin with the fingers. The accident had occurred during the act of vomiting, and the patient was in a region where surgical assistance could not be obtained—until a month after it happened. An effort at reduction was then made, but without success, when she applied to me for relief. She remained in town for three days

after the operation, and then was forced to return to the country. Having received proper directions as to the necessary precautions to be observed, and not having been heard from since, it is presumed that no further trouble was experienced.

There were no cases of compound dislocation treated in the hospital, but one interesting case of compound dislocation of the ankle came under my charge outside, of which brief mention will be made.

The patient, a stout, vigorous young man, aged about twenty years, in jumping from a runaway horse lighted upon a cobble stone, and so turned his left foot as to throw the tibia out of joint and through the skin. He was seen about half an hour after the accident. The foot was almost at right angles to the leg, the bone protruding for several inches. Notwithstanding the severity of the injury, he did not manifest a corresponding degree of shock, and being in full vigor of health, the case was undertaken with cheerful anticipations, which, it is a pleasure to state, the result has realized. Chloroform having been administered, gentle, steady extension was made by the assistants, while with the handle of an ordinary silver spoon, slipped carefully under the portion of skin overlapped by the bone—its shaft resting upon the bone—and used as a lever, the reduction was effected without the slightest difficulty.

The wound appeared to be so cleanly cut, and the patient was in such good condition, that an effort was made to secure its healing and convert the injury into a simple dislocation, by carefully bringing its edges together. The ordinary means to keep the foot in proper position were employed, and to control any inflammatory action constant irrigation was kept up over the joint. Although destructive inflammation was arrested, the soft parts over the internal malleolus proved to be so severely contused that quite a slough came away, exposing to a great extent the cavity of the joint, thus disappointing our first hopes. Pus subsequently burrowed up the limb and with the most remarkable rapidity—it was fortunately confined to the subcutaneous cellular tissue. Early and free incisions were made for its escape. Notwithstanding this it still tended to progress upwards, and it was thought that material aid in arresting it was afforded by the use of com-

presses confined by adhesive plaster. At the present writing, seven weeks from the date of injury, the patient is doing excellently well. The heads of ankle bone are perfectly intact, and he will undoubtedly have a very good foot. In connection with this case, I would call special attention to the manner of reducing the protruding bone; which, it is hardly necessary to state, is quite as applicable to compound fractures with similar protrusions. By adopting the method employed in this case, there will rarely, if ever, be any necessity for sawing off the exposed portion of bone or slitting the skin.

There were three amputations performed—one of the thigh, one of the leg, just below the knee, and one secondary amputation of the leg, for the relief of an ulcerated stump.

The amputation of the thigh was performed for bony ankylosis of the knee-joint, in a bent position, with subluxation of the femoral condyles inwards. The joint had been laid open several years previous by a heavy blow with a large broad-axe, which probably severed the crucial ligaments. Not receiving very strict attention after his mishap, he became the victim of a deformity which rendered his limb a constant burden. His solicitations to have it removed were most earnest, and, after due deliberation, amputation just above the knee was determined on in preference to any conservative means. It was considered that in his case an artificial limb would be of far more service than the natural one, if perchance any such attempt to preserve it should have succeeded; and furthermore, that the risk would be no greater, if as great; for in the present impoverished condition of the hospital, the dangers of long confinement, extensive suppuration, etc., are not to be carelessly overlooked. The antero-posterior flap operation was performed, and he did excellently well for three weeks after, when symptoms of pyæmia were manifested as suddenly as they were unexpected, and in spite of every endeavor to save him, he died during the fourth week. Post-mortem examination revealed the presence of pus extending for several inches up the cavity of the bone, and also infiltrated in its cancellated structure. The apex of one lung was pretty thoroughly studded with tuberculous deposits, otherwise his whole organism appeared to be in a healthy condition.

The amputation of the leg was performed for an ulcer, extending from the ankle to within a few inches of the tuberosity of the tibia. No time was lost in determining upon the propriety of amputation. The ulcer was painful, discharging large quantities of thin, ichorous matter, and although the patient was pale, emaciated, with a rapid, feeble pulse, without appetite, it was speedily observed, that any means to build him up, however well-directed, was seriously overbalanced by the pain and excessive drain to which he was hourly subjected, and only involved the loss of valuable time.

The borders of the ulcer were so defined as to admit of the flap operation, but, as has always been the practice in the wards, preference was given to the circular method, as giving the best stump, and securing the patient against the evil effects which have so often been observed to follow the flap operation. When carried from the operating table and placed in his bed, he had a much better pulse than before the operation, and from this time began his improvement, which was uninterrupted. In due time he was discharged, in better health than he had been for eighteen months. He had been relieved from an incubus which was weighing him down, and it did seem that nature, truly thankful for the good riddance, rallied her forces with an alacrity and vigor scarcely to be looked for. But I will state, that with all the apparent disadvantages, such cases, as a rule, do far better than when the same extreme measures are taken for the relief of patients in vigorous health, suffering from the effects of destructive injuries which have produced a sudden and severe shock to the system. If an opportunity to amputate while the patient is under the shock be offered, no better period could be chosen. By refraining from annoying, by the indiscriminate pouring in of alcoholic stimulants, the stomach, which in this condition of shock is quite uncertain as to absorption, while it may be even disturbed, and instead, using an enema of carbonate of ammonia just as chloroform begins to manifest its effects, the object desired is obtained much more speedily, more satisfactorily, and last, but not least, with much less detriment to the patient. With this simple precaution, the addition of the shock of the operation to the already existing shock of the injury, amounts to but little

if anything, and the patient is placed in the best condition for recovery. However this opportunity is seldom or ever afforded. The patient is rarely ever seen until several hours after the receipt of the injury, when reaction has set in. To attempt operative procedure at this stage would be as inhuman as the casting loose the drowning man's grasp upon the friendly shore, which his frantic efforts had enabled him to reach. Far better to wait. When suppuration has fairly ensued, and the drain seems to counterbalance the efforts of nature, which are supposed to have been, in the meanwhile, properly sustained, then amputation can be resorted to with the same degree of confidence as was felt in the case of ulcer just cited.

The patient who presented himself for treatment for ulcerated stump, had had his leg amputated during the war on account of gunshot wound. The flap operation was performed, and although made perfectly well, the large muscles of the calf, which form the greater portion of the flap, by their constant contractions, kept him in a state of perpetual uneasiness. The skin over the tibia gradually thinned and eventually ulcerated. For this reason especially is preference always given to the circular method or else the oval skin flap. Notwithstanding the patient was, to all appearances, stout and healthy, the operation was undertaken with a degree of reluctance which elicited every care and precaution, it having been observed that the procedure subjects such patients to the same risks as primary amputation; indeed, in quite a number of instances it has seemed to be greater. It is impossible to determine how long it takes the system to recover from the deep impression made upon it by the severe injury and subsequent operation, and in this case ample testimony was given as to the correctness of this practical observation. Although he recovered with an excellent stump, he suffered very much, and required the most careful and constant watching for several weeks.

It so happened, that in two of the three cases of amputation bleeding occurred in the shape of a general oozing from the cut surfaces, notwithstanding the stumps were not dressed until every evidence of hæmorrhage had disappeared. This oozing of blood occurred in both about eight or ten hours after the operation. The sutures were immediately cut, the stumps opened, and after

the clots of blood were carefully removed, pledgets of lint, tho roughly wet in a saturated solution of ferric alum, were freely applied to the bleeding surface. No difficulty was experienced in arresting the hæmorrhage, and it was considered that the styptic, besides doing this service, exerted a very material influence upon the subsequent healing process by its beneficial action on the tissues. In one of these cases, that peculiar *gasterrhœa* which so frequently occurs after capital operations and the free use of chloroform, took place with a considerable degree of violence. Stimulants, opiates and the ordinary anti-emetic medicines were freely administered during the night, but as has always been observed to be the case, they proved to be worse than useless. When seen at the regular morning visit, he could retain nothing on his stomach, incessantly vomiting large quantities of vitiated secretion; his pulse was feeble and rapid, and his countenance was most anxious and depressed. Without delay he was ordered eight grains of calomel, to be given in grain doses every fifteen or twenty minutes. He had not taken the sixth grain when the vomiting ceased, and with this occurred the most remarkable change for the better in every other respect. Small doses of sulphate of magnesia were given every hour until the bowels were gently moved, and this was all. He took light nourishment during the night, and in the morning was found partaking of an ample breakfast with good relish. The inestimable benefit of calomel, given in the small doses above indicated, in such conditions, which are far from being of seldom occurrence, cannot be too much extolled. In all operations where anæsthesia was necessary chloroform was used—ether was never resorted to. The administration of the chloroform was always preceded by a stiff toddy of either brandy or whisky, or, as mentioned before, an enema of carbonate of ammonia, it being considered that it did away with some of the risks, and that the patient went under its influence more kindly. It was also made an object to bring the patient as rapidly as possible under its influence, rather than allow him to take it slowly and in small doses. It was considered that by so doing the operator was not only spared many annoyances, but the patients escaped the bad effects which follow its gradual administration, while no additional danger was entailed.

Although it was used many times each month, no disagreeable results occurred.

Two cases of tetanus were treated, both traumatic, resulting one from wound of the head, the other of the face. The symptoms of tetanus manifested themselves in one case in one week, in the other, three weeks after the receipt of the injury. The disease was looked upon as one having a certain defined course to run, and no active treatment was attempted. The patients were placed quietly in a bed, protected from the light by thick curtains, and every possible care taken to preserve them from all sources of disturbance. When approached, it was done most gently, in such a way as not to startle them. Opium, in the form of *black drop*, combined with camphor, was administered in such quantities as to keep them moderately under its influence, and milk punch, beef-tea, eggs, etc., were given without stint. In neither case were the jaws so closely locked as to interfere with the administration of the medicine and food by the mouth. Had it been so, or had the act of swallowing tended to bring on spasms, the rectum would have been employed. The bowels, when inactive, were moved either by a gently stimulating enema or by the mildest laxatives. Both cases recovered under this simple management—one in three, the other in five weeks.

Indolent ulcers of the leg, of long standing, were treated as a rule, by strapping and bandaging, the ulcer having been first properly stimulated in the ordinary way. The chloride of zinc, ten grains to the ounce of water, was a favorite stimulant in these cases. A due amount of rest was required, and attention paid to the general health. To prevent that excoriation of the surrounding skin, which so frequently accompanies the use of the adhesive plaster, great advantage was found in the washing of the skin before each application, with a solution of nitrate of lead, twenty or thirty grains to the ounce of water. After a sufficient amount of action had been obtained by the use of such strong stimulants as the chloride of zinc just mentioned, preference was given to the sulphate of copper, two grains of the salt to the ounce of water—never any stronger. Many cases occurred of ulcerated legs, beginning by the formation of small blisters, which after breaking, left ulcers more or less superficial. These ulcers

would frequently heal of themselves, but only to break out again in a short while. In such cases nothing seemed to produce a more rapid and permanent cure than the solution of twenty grains of nitrate of lead to the ounce of water, with which the limb was to be thoroughly washed, morning and evening.

In a large proportion of the irritable ulcers, more especially those which assumed the serpiginous form, healing on one side while seeming to eat their way on the other, and producing a sensation as though some corroding substance was at work, the greatest possible advantage was derived from the application of what is generally called Magendie's escharotic ointment. The formula by which it is prepared is as follows: Ten grains of metallic iodine, thirty grains of calomel, well rubbed up together, and one ounce of cerate added. The salve being spread lightly upon a piece of soft linen, is laid over the sore, and allowed to remain for two or three hours. At first it produces some degree of pain, but in a short while it subsides, and with it the torture to which the sufferer has been subjected night and day. After this application, the ulcers, as a rule, were completely changed in character, and with the ordinary simple treatment healed without difficulty. Sometimes two, three, and even four applications were required. In one case of exceedingly irritable ulcer, which resisted every treatment that could be devised, both local and constitutional, *Cayenne pepper, pure*, was freely sprinkled into it, and with the best results; in a few hours perfect relief was obtained. The application of the pepper only produced a sense of heat—not amounting to positive pain. The ulcer was not of that character to which the pepper had previously been found to be peculiarly applicable, but every other means having failed to give any relief whatever, it was resorted to as a forlorn hope, and its good results in relieving the severe, agonizing pain, and changing so materially for the better the character of the ulcer, entitles it to the most favorable consideration of the profession. Unguents, as a general rule, were not much used. If it was deemed expedient to use a soothing, and at the same time gently astringent salve, preference was given to the oxide of zinc ointment. If a gentle stimulating effect was desirable, the resin ointment, generally diluted with equal parts of simple cerate, was used. The only

form of cutaneous disease treated was eczema. Locally mild applications, calculated to relieve the burning and itching, were used; such as weak alkaline washes, with small quantities of morphia, the oxide of zinc ointment, etc. Constitutionally, such tonics as were calculated to establish vigorous health, with minute doses of arsenic and iodine, were used. Not more than an eighth to a sixteenth of a grain of iodine, with three or four drops of Fowler's arsenical solution, were used twice a day; frequently less quantities were administered, and the medicine continued for some length of time.

ART. VIII.—*Surgical Memoranda*: By Prof. T. G. RICHARDSON, M. D.

1. *Gunshot Wound of the Membranous Urethra Resulting in Complete Occlusion, of Five Years duration. Perineal Section; Cure.*

MR. F. R., of the C. S. A., was wounded at the siege of Vicksburg, in the spring of 1863, by a fragment of shell, which entered the anus obliquely from behind, slightly notching the sphincter upon one side and burying itself deep in the perineum. The foreign body having been immediately removed, the first effort to empty the bladder showed that either the neck of this organ or the urethra had been divided, as the whole of the urine escaped through the wound. But little constitutional disturbance ensued, and as no catheter was used the urine continued to be passed through the artificial opening into the rectum, and thence, by the same effort out at the anus. The wound in the mean time granulated and contracted, leaving a small fistulous opening communicating with the lower end of the bowel.

The patient was brought to the city and placed in my ward by my friend Dr. J. E. Wright, of Columbia, La., who informed me that notwithstanding repeated and careful examinations, he could not discover the outlet of the sinus, on account of its very small size and the corrugated condition of the mucous membrane of the rectum; although it was quite evident to him that it was not more than three or four lines within the verge of the anus.

Upon introducing a catheter, I found the point of the instrument could be carried a very short distance beyond the bulbous urethra, where it encountered an abrupt obstruction. The patient had complete control over his bladder, which he emptied by the anus at the usual intervals, not a drop of urine having passed the meatus since the time of the accident. He had also, occasionally, seminal emissions which followed the same course. Externally, there was not the slightest evidence of wound of the perineum.

The facts just stated ; namely, the perfect control of the sphincter of the bladder, the healthy condition of the seminal function, and the ejection of the spermatic fluid through the fistula, and the ready penetration of the catheter a little way beyond the bulb, established conclusively the situation of the obstruction in the membranous urethra ; and the inability from the outset to pass the smallest portion of urine along the natural way led to the inference that the canal had been entirely severed.

To re-establish the natural passage, two procedures suggested themselves. 1st. To divide the obstructing cicatrice from within by means of a lancet shaped urethrotome ; and, 2d. To perform the perineal section and heal the parts over a catheter. The former being considered somewhat hazardous, the latter was adopted. The operation was performed in the presence of the Medical Class of the University, and a minute account of it is not necessary here. Suffice it to say, that with the forefinger of the left hand in the rectum pressing upon the apex of the prostate gland, and a large sized staff held in the urethra by an assistant firmly against the obstruction, an incision was made in the middle line of the perineum directly down to the point of the staff, and thence carried backward toward the end of the finger. The urethra behind the cicatrix having become considerably dilated in consequence of the repeated pressure to which it had been so long subjected by the efforts of the bladder, was reached by the knife without the slightest difficulty, and the staff pushed on into the bladder. A silver catheter was then substituted for the staff, and allowed to remain in place two or three days, when it was withdrawn, on account of the inflammation which it occasioned in the spongy urethra. An abscess in the

latter situation followed, and in due time was opened, and in the mean time a female catheter was inserted through the perineal wound into the bladder, and maintained in position by means of proper fastenings. As soon as the condition of the parts would admit of it, the latter was withdrawn, and the male catheter introduced, by the natural passage, at regular intervals.

Having entire confidence in the skill and good judgment of Dr. Wright, and feeling well assured that the desired result would be secured, I now permitted the patient, after two weeks' sojourn in the hospital, to return home, with directions to continue the use of the catheter, at gradually increasing intervals, for several weeks or months. Since then I have heard from Dr. Wright that the fistula resulting from the abscess and the wound of the perineum have both entirely closed, and the natural functions of the urethra been fully restored.

2. *Compound Fracture of the Lower Jaw, treated with Bean's Interdental Splint.*

Mary R., a stout Irishwoman, applied as an out-door patient at hospital, March 1, for injuries about the face, produced by falling head foremost down stairs upon a brick pavement. Examination showed complete division of the upper lip into the left nostril, and oblique fracture of the inferior maxilla upon the corresponding side of the symphysis. The fragments of the broken jaw were not in apposition but overlapping, one of them having been evidently driven in by the fall, producing great laceration of the gums. With some effort the broken ends were reduced and brought into contact; but owing to the obliquity of the line of fracture and the contraction of the muscles attached to the longer fragment, displacement recurred so soon as the hands were removed. Several and various attempts to keep the parts in proper position having failed, it was determined to stitch the wound in the upper lip, and after this was healed to have an interdental splint applied to the fractured bone, the parts being in the mean time gently supported by a compress beneath the chin, confined by a bandage over the head. The lip having completely united in the course of four or five days, the patient was taken to Dr. J. E. Kells, dentist, who took the necessary casts and constructed

upon them an interdental splint of vulcanized rubber. By this means the fragments were brought into perfect apposition, and so maintained for three or four weeks, at the end of which time complete union had taken place.

The interdental splint, it may not be generally known, was invented by Dr. J. B. Bean, dental surgeon in the Confederate States Army, and is one of the most valuable additions made to the surgical *armamentarium* during the past ten years. A detailed account of its preparation may be found in the New Orleans Medical and Surgical Journal for November, 1866, by Dr. Warren Stone, Jr. I take the liberty of also stating that Dr. Kells will cheerfully demonstrate the process to any one who may call upon him.

3. *Cystic Tumor of the Lower Jaw. Removal of the larger Part of the Body of the Bone.*

J. F., æt. 18, from Batesville, Miss., entered Prof. Stone's wards in the Charity Hospital, December 7, 1867, for tumor of the lower jaw. The disease was ascribed to a blow received upon the chin two years previously, since which time the bone had been steadily enlarging. Upon examination by Prof. Stone and myself, the enlargement was found to involve both the alveolar and basilar divisions of the bone, from the symphysis to within a short distance of the ramus upon the right, and to the first large molar tooth upon the left side. The tumor thus formed did not exceed the size of a pullet's egg, but projected almost altogether towards the cavity of the mouth, where it interfered very uncomfortably with mastication and the movements of the tongue. It had never been the seat of any considerable pain, and there was no evidence whatever of contamination of the cervical lymphatic glands or of any constitutional cachexy. Under firm pressure it was ascertained to consist of a thin shell of bone enclosing a semi-solid elastic tissue.

Taking thus into consideration the situation of the growth, its painless character, its comparatively slow increase, its semi-fluid consistence, the absence of any local or constitutional contamination, and its indisposition to ulcerate, the disease was unhesitatingly pronounced cystic tumor of the bone, most probably of the

myeloid variety. Removal by the knife was therefore advised, with the assurance that a return would not be likely to occur, as such tumors seem to be generally benign.

By the request of Prof. Stone, I performed the operation, in the presence of the medical class of the University, with the assistance of Dr. Warren Stone, Jr., and others, on the 9th of December. The method pursued, after placing the patient under the influence of chloroform, consisted in dividing the skin by a single curved incision along the base of the jaw, extending nearly to the ramus on each side; dissecting back the soft parts in front and below; and then dividing the body of the bone, by means of a small saw, a short distance beyond the limits of the enlargement. This having been done, and a ligature passed through the tongue and confided to an assistant to prevent retraction of the organ and consequent suffocation, firm traction was made upon the mass at one end, and its separation rapidly effected by dividing the mylo-hyoid, genio-hyoid and genio-glossal muscles close to their bony attachments.

The operation was accompanied and followed by a frightful hæmorrhage, the blood welling up from numberless vessels too small to be secured by ligatures; but by the free use of iron alum and filling the gaping wound with broken ice the flow was gradually arrested, but not until the patient was apparently almost exsanguineous. It was now also found that one of the sawn ends of the bone presented an unhealthy appearance, and the further removal of half an inch became necessary; but this was readily effected by the use of cutting forceps. After reaction had been established by means of frictions, hot bricks and stimulants, the edges of the wound were brought together with twisted sutures, and the point of the tongue confined outside of the mouth by attaching the ligature to a strip of adhesive plaster placed upon the chest. This latter precaution was absolutely necessary, for it was found by experiment that as soon as the traction was relaxed the organ was drawn back into the throat and threatened suffocation. By careful attention upon the part of Mr. Watkins, the student of the ward, the case did well, and at the end of three days, the patient being able to control his tongue, the ligature was removed. The sutures were removed upon the fourth and fifth days, entire

union having taken place, and in twelve days from the time of the operation the patient returned home.

Examination of the tumor subsequent to its removal proved the correctness of the diagnosis, for notwithstanding the close resemblance of the contents of the bony cyst to the brain-like substance of medullary cancer, the microscopic elements were those of myeloid tumor. In farther proof of its benign nature, it may be stated that it is now six months since the operation, and there is not the slightest evidence of any disposition to a recurrence, which would scarcely be the case in encephaloid.

4. *Traumatic Epilepsy treated by Trephining.*

Ben Smith, twelve years of age, from Opelousas, La., came under my care in March, 1868. He was struck, December, 1866, in the middle of the forehead by the end of a heavy rail, which bruised the soft parts, but did not break the skull. An abscess ensued at the site of the injury, which, upon being opened, continued to discharge for two or three months. During this time there was no symptom of cerebral disturbance, but about two months after the closing of the abscess, a severe epileptic spasm occurred early in the morning, and repeated itself at night, for several succeeding days. The spasms then became less regular, but invariably returned after an interval of three or four days, when three or four attacks would occur during a single night. For several months past one or more slight movements, (what French writers denominate *petit mal*,) have taken place *every night*, alternated about every third or fourth night by a severe spasm (*grand mal*.)

Upon examination, I found a slight scar indicating the situation of the original injury and abscess, but not the slightest depression or roughness of the bone could be detected. The cerebral functions were slow and uncertain, the expression of countenance rather stupid, and the father informed me that the boy's memory was wholly unreliable; but otherwise there seemed to be no great change in the mental faculties.

The patient having been already submitted by his attending physician at home to the usual courses of treatment, including the free use of the bromide of potassium, I concluded, as a last resort,

and at the earnest solicitation of the father, to apply the trephine, suspecting that there might possibly be a slight exostosis upon the inner aspect of the skull, or some thickening of the dura mater. In this opinion and conclusion I was sustained by Prof. Stone, to whom the case was submitted. On the 19th of March, in the presence of my distinguished colleague just mentioned, and Dr. B. H. Moss, the patient having been placed under the influence of chloroform, I applied the crown of a large-sized trephine immediately to the left of the middle line of the forehead and about an inch above the superciliary ridge. The disc of bone thus removed presented upon its inner surface no appearance whatever of change of structure; nor did the dura mater seem to me to be materially altered, although Prof. Stone expressed the opinion that it was more opaque than normal, and slightly thickened. There was, however, a considerable accumulation of serum in the arachnoid sac, which, whenever the child screamed, formed a prominent swelling in the bottom of the wound. So tense indeed did this swelling become under these circumstances that the dura mater which had been barely scratched by the trephine, gave way during my absence about half an hour afterward, and upon my return, I found the serum running down upon the face; but it was impossible even to conjecture with any accuracy how much had escaped. As soon as this accident occurred, the patient, who had been screaming at the top of his voice ever since the effect of the chloroform had passed off, became suddenly calm, and never uttered another cry. The wound having been left open in consequence of a little hæmorrhage, was now closed by approximating the edges of the flap with two points of interrupted suture, and a small tent inserted at its lower angle to serve as a drain for the serum and subsequent effusion.

The succeeding night three or four slight spasms were observed, but the patient slept well, and the next morning expressed himself as feeling quite comfortable. A grain of calomel was ordered to be given twice a day with a view to its constitutional effect, but was discontinued after three or four days, and bromide of potassium, in thirty-grain doses morning and evening, substituted. Since the first night, now more than two months ago, no spasm has

taken place; but it is proper to add that the tent in the wound is still used, and the patient continues to take the bromide of potassium.

In reporting this case I am fully aware that sufficient time has not elapsed to test the permanency of the relief, but as there has been a marked improvement in the mental faculties, evinced by the brightening of the countenance, increasing cheerfulness, and vivacity, I am encouraged to hope that the favorable change may prove permanent. The further history of the case, be what it may, shall be reported in the next annual publication, if not before.

ART. IX.—*Medical Memoranda*: By S. M. BEMISS, M. D., Prof. Theory and Practice of Medicine, etc.

THE following tabulated list represents the gross number of cases treated in wards 18, 19, and 21 during the term of lectures, with the addition of several patients sent me from other wards or from private practice. The nosological arrangement is according to the classification of Dr. Farr:

CLASS.	ORDER.	ADMIT- TED.	DIED.	DIS- CHARGED IN HOS- PITAL.
I.—ZYMOTIC DISEASES	.....	114	13	97
	I.— <i>Miasmatic Diseases</i> —			
	Intermittent fever.....	48		48
	Remittent fever.....	2		2
	Typhoid fever.....	1		
	Yellow fever.....	9	3	6
	Acute Dysentery.....	10		10
	Chronic Dysentery.....	2	1	1
	Acute Diarrhœa.....	7		7
	Chronic Diarrhœa.....	8	1	5
	Epidemic Cholera.....	12	8	4
	Erysipelas.....	2		2
	Total.....	101	13	85
	II.— <i>Enthetic Diseases</i> —			
	Gonorrhœal Rheumatism.....	1		1
	Syphilitic affections.....	5		4
	Total.....	6		5

CLASS.	ORDER.	ADMIT- TED.	DIED.	Dis- CHARG'D IN Hos- PITAL.
ZYMOTIC DISEASES <i>Continued.</i>	III.— <i>Dietetic Diseases</i> —			
	Alcoholism	5		5
	Mercurialism	1		1
	Total.....	6		6
	IV.— <i>Parasitic Diseases</i> —			
	Scabies	1		1
II.—CONSTITUTIONAL DISEASES.	.....	28	2	17
	I.— <i>Diathetic Diseases</i> —			
	Acute Rheumatism	5		5
	Chronic Rheumatism.....	5		1
	Anemia.....	3		3
	Total.....	13		9
	II.— <i>Tuberculous Diseases</i> —			
	Pulmonary Tuberculosis.....	13	2	7
	Scrofula	2		1
	Total.....	15	2	8
III.—LOCAL DIS- EASES.	I.— <i>Nervous System</i> —			
	Hemiplegia	4		1
	Neuralgia	2		1
	Delirium Tremens.....	3		3
	Chorea	1		1
	Traumatic Tetanus	1		1
	Epilepsy.....	3		1
	Total.....	14		7
	II.— <i>Circulatory System</i> —			
	Valvular Disease of Heart.....	6	2	4
	Thrombosis	1	1	
	Total.....	7	3	4
	III.— <i>Respiratory System</i> —			
	Pneumonia	7	5	2
	Acute Bronchitis	2		2
	Chronic Bronchitis	1		1
	Laryngitis	2		2
	Acute Pleuritis.....	2		2
	Chronic Pleuritis.....	1		1
	*Edema of Glottis.....	1		
	†Edema of Lungs.....	1		
	Asthma	1		1
	Emphysema	1		1
	Total.....	19	5	11

* Died of Pneumonia.

† Died of Bright's Disease.

CLASS.	ORDER.	ADMIT- TED.	DIED.	DIS- CHARG'D IN HOS- PITAL.
LOCAL DISEASES <i>Continued.</i>	IV.— <i>Digestive System</i> —			
	Dyspepsia.....	1		1
	Gastro-Duodenitis (catarrhal).....	2		2
	Jaundice.. ..	1		1
	Hepatitis	1		1
	Tonsillitis	1		1
	Ascites	4	1	3
	Total	10	1	9
	V.— <i>Urinary System</i> —			
	Albuminuria.....	2	2	
	Diuresis	2		2
	Total	4	2	2
	VI.— <i>Generative System</i> —			
	Seminal Losses.....	1		1
	VII.— <i>Locomotive System</i> —			
	Synovitis	2		2
	VIII.— <i>Integumentary System</i> —			
	Eczema	1		1
IV.—DEVELOPMENT- AL DISEASES.	IV.— <i>Diseases of Nutrition</i> —			
	Lardaceous Liver and Spleen....	1		1
Grand Total		201	26	141
				22

The Zymotic diseases exhibited their usual importance, both as respects the high rank of the figures by which they are represented in the mortality list, and as affording interesting examples for clinical study.

The Periodic Fevers included but one case so irregular, or malignant, as to justify its classification among the “pernicious” forms. I think this case was properly diagnosed as “malarial coma” by Mr., now Dr., Kelly. The patient had two paroxysms, occurring upon alternate days, marked by unconsciousness, heavy breathing and struggling pulse. Rapidly induced cinchonism prevented a third return, and the patient left the hospital on the second day after admission.

In the aggregate, the cases of malarial diseases admitted to hospital were attended, in more than the ordinary proportion of instances, with enlargement of spleen, anæmia and disposition to

recur. The prominence of these clinical features rendered the prescription of iron, arsenic and strychnia frequently necessary. Efforts were made to designate the cases for which each of the remedies above enumerated was considered specially appropriate. Chalybeates were obviously indicated to restore impoverished blood. Arsenic was considered specially adapted to cases marked by periodic neuralgias; but was also prescribed as antiperiodic where the return of paroxysms was not prevented by quinine. Strychnia was likewise sometimes given as an antiperiodic; but more often with a view to its influence as a direct and powerful nerve tonic. It was therefore given preferably in those cases in which the recurrence of the paroxysms seemed ascribable to impressions stamped by force of habit, or otherwise, upon the nervous system. In no other manner does it seem reasonable to account for the periodicity, marking, in after life, the diseases of persons who have for a considerable time been the subjects of malarial influences.

It may be profitable to those who failed to copy the prescriptions from the ward-books, to mention some of the formulæ employed in the treatment of periodic diseases and their sequelæ. When speedy cinchonism was sought, the house solution of quinine, containing five grains quinine and ten drops tincture of opium to each ℥i, was exhibited in from ℥i to ℥ii doses until this end was accomplished. Iron was given in combination with quinine in the following forms: *R.* Citrate of iron and quinine, ℥ii; infusion gentian, ℥iv. *M. S.* Tablespoonful thrice daily. *R.* Ammonio-sulphate iron; sulphate quinine aa. ℥ii; aromatic tinct. sulph acid, ℥i to ℥ii; water ℥ii. *M. S.* Teaspoonful or dessert-spoonful thrice daily, or every fourth hour. (Prof. Mallet.) *R.* Precip. carb. iron, sulph. quinine aa. ℥ii; pulv. rhubarb ℥i. Divide in twelve powders. *S.* One thrice daily. *R.* Sulph. quinine, sulph. iron aa. ℥ss; extract nux vomica, ℥i; pulv. aloes, grs. xv. *M.* Divide in twenty pills. *S.* One thrice daily. Arsenic was given in Fowler's solution, gtt. vii to xii thrice daily. Strychnia in Marshall Hall's solution. *R.* Strychnia gr. i; dilute alcohol ℥i; acetic acid gtt. xv; water, ℥vii. *M. S.* Twenty to thirty drops thrice daily.

The frequency of blood deteriorations, as a prominent charac-

teristic of the periodic diseases of 1867, may account for the many cases of malarial hematuria reported in different parts of the South. Letters have reached me, and students have applied, asking opinions in reference to the pathology and treatment of this alarming manifestation of disease. It has seemed to me that its cause must be found in one or more of three pathological states. First, alterations of the blood itself, favoring its extravasation; second, physical obstruction from stasis or congestion; third, impaired nutrition of the capillary walls, rendering their rupture abnormally easy. The frequent occurrence of capillary engorgements and areolar infiltration proves that the blood is liable, under malarial influences, to undergo alterations affecting its properties as a circulatory and osmotic fluid. Congestions are a part of the phenomena of every paroxysm of malarial fever. The more easy rupture of capillary walls in cases marked by considerable or long existing impairment of nutritive processes, is not only an inferential event, but is proved by the readiness of sanguineous extravasation after bruises or the application of dry cups. The best teachings of pathology justify the conclusion that capillary rupture is essential to the occurrence of hæmorrhage, therefore the effects of impaired nutrition upon the renal blood vessels, in weakening their capability of resisting pressure, must prove the most important factor in the production of hematuria. We therefore expect bloody urine to complicate those cases of malaria in which the processes of nutrition and tissue-change suffer greatest damage, whether that derangement is the result of long existing cachexy, or a perversion of fluids and solids, occurring more rapidly, as in poisoning from phosphorus or in many cases of yellow fever. We must await the accumulation of more facts before venturing upon a more authoritative explanation of the pathology of malarial hematuria, or of the cause of the greater frequency of the symptom in connection with some epidemics than with others.

The first appearance of the blood is generally during, or immediately subsequent to a paroxysm. Sometimes its presence in the urine is limited to a given stage of the paroxysm; in other cases it becomes persistent for a number of days, or until death.

Dr. Brinton explains the admitted liability of renal hæmor-

rhage to return, or become chronic, by referring the fact to the derangements and obstructions in the circulation of the kidney, occasioned by the extravasation itself. The hæmorrhage is rarely in sufficient quantity to imperil life by loss of blood, however seriously it may affect prognosis by pointing to morbid states, whose significance the experienced physician at once apprehends.

The treatment should vary accordingly, as the medical attendant estimates the pathological state underlying and causing the hæmaturia. As in all cases of pernicious, or irregular malarial attacks, the indication urgent above all others would be the production of cinchonism at the earliest practicable moment. The remedies most likely to arrest the hæmaturia, if it proceeded from increased pressure, either distal or proximal, would be such as relieved the congestion, whether portal or renal; and such as subdued the heart's action, if the pressure which ruptured the capillaries was from excessive arterial force. Cold to the lumbar region, or, according to Mackintosh, cold water enemata would be useful adjuvants. Hæmaturia from depraved blood, or the weakened vascular walls of innutrition, would require remedies addressed to these conditions.

The astringent preparations of iron; vegetable bitters and mineral acids in combination; tannic acid; ergot, and opium would constitute judicious prescriptions, accordingly as an anæsthetic effect or an influence upon the capillary vascular system was the object sought to be obtained.

The case of typhoid fever was a strongly illustrative example of that disease, being characterized by the usual intestinal symptoms and the rose eruption. It progressed to a favorable issue under the observation of Prof. Chaillé. The treatment he instituted was the mineral acids, and careful attention to regimen.

A large phlegmonous abscess occurred as a sequel in this case, and was opened, allowing a free discharge of pus. Two others were threatened, but disappeared under the local application of tinct. of iodine persistently made. Under my observation, success in the dispersion of threatened abscesses occurring as sequelæ of blood diseases is the exception rather than the rule, and such is the previously announced experience of my colleague.

The following notes, very greatly condensed, are only intended

to present such a summary of the leading symptoms and points of treatment of the yellow fever cases, as to enable those who witnessed them to individualize each one.

William Davies, aged 32, in New Orleans one week, admitted to bed 273 November 6th. Taken sick afternoon of 5th; took quinine $\mathfrak{D}\text{i}$, had warm pediluvium immediately, and castor oil $\mathfrak{z}\text{ss}$. Nov. 7th, apyrexia; irritability of stomach and tenderness upon pressure. Neutral mixture, $\mathfrak{z}\text{ss}$; morphia, one twenty-fourth part of a grain; repeat each hour until the stomach is quieted. Sinapism to epigastrium. 8th. Continue treatment; very small portions of iced milk permitted. 9th. Bi-carb. soda, gr. iii; cherry laurel water, $\mathfrak{z}\text{i}$; morphia 1-24th part of a grain; orange flower water, $\mathfrak{z}\text{i}$. every two to four hours. 10th. Patient improved. Beef-tea and chicken water; wine of bark. Discharged November 14th.

John S. Curtis, aged 25, in New Orleans ten days, admitted to bed 284 November 13th; taken sick on previous day. First prescriptions as in preceding case; iced drinks and cold to head. On 14th and 15th took $\mathfrak{z}\text{ii}$ liq. acet. amm.; spts. nitre, $\mathfrak{z}\text{ss}$; orange-flower water, $\mathfrak{z}\text{i}$. M. S. Every three hours. Small portions of iced milk. On 17th, pale ale, beef and chicken essence. Discharged November 23d.

Pat. Conley, aged 22, in New Orleans ten days, admitted to bed 285 November 24th. Taken on 21st with a chill, followed by fever. Countenance dusky and turgid; eyes injected, gums red and swollen. Pulse obliterated by moderate pressure; urine charged with albumen and reduced in quantity. He was ordered spts. nitre $\mathfrak{z}\text{ss}$ in effervescing citrate potash every second hour, and efforts were made to sustain him by administering beef essence and brandy by mouth and rectum. He died on the 26th. Delirium, coma and complete suspension of urine existed for over twelve hours prior to decease. No post-mortem.

W. Dietrich, aged 26, arrived in New Orleans in October; admitted to hospital November 4th, to be treated for malarial fever and diarrhoea; had well defined attack of yellow fever January 4th, took castor oil $\mathfrak{z}\text{ss}$, followed by quinine $\mathfrak{D}\text{i}$. Febrile paroxysms lasted over seventy hours; urine albuminous and tinged with bile pigments; convalescence tedious and complicated by bloody furuncles. Treatment—Nutritious food, stimulants, iron, quinine and iodide of potassium. Discharged February 9th.

George Fitch, admitted to bed 289 October 16, on the subsequent day to his attack. He was ordered a warm mustard foot-bath, with $\mathfrak{z}\text{iii}$ Haustus quinia of the house (equal to 15 grs.). On the 17th, marked tenderness over the epigastrium and nausea. Ordered bi-carb. soda and cherry-laurel water. Black vomit occurred during the night and persisted throughout the 18th. Patient was permitted pellets of ice and sustained by enemata of beef essence and brandy. Convalescence was slow and attended

by numerous furuncles, especially abundant about the neck and hands. Treatment during convalescence—iron and mineral acids, the latter given in cold infusion of wild cherry bark. Discharged December 1.

Michael Collins, admitted to bed 290 October 23, the second day after seizure. Took ten grs. quinia each day for three days. No vomiting. Supported during calm stage with milk punch and beef essence. Convalescence tedious and complicated with parotid abscess. Treatment during convalescence—mur. tinct. iron and chlorate potass. Discharged Nov. 29th.

John Smith, admitted to bed 301 Nov. 14th, thirty hours after seizure. Ordered castor oil $\bar{s}$ ss and warm mustard pediluvium, to be followed by liq. ammon. acet. $\bar{s}$ ss, every three hours. Secretion of urine abundant. No albumen. Complexion of patient dingy yellow, and marks of pressure upon surface slowly disappearing; eyes injected and gums swollen; skin moist. On the 17th the color of the patient had become a brighter yellow. Urine scanty and containing albumen. Mind wandering. Died on 19th, without black vomit or other hæmorrhage.

John Beatty, admitted to bed 310 Dec. 4th. Got mustard foot-bath and fifteen grains quinine. Had copious ejections of black vomit, with retention of urine. Sustained by nutritious and stimulating enemata. Convalescence attended with insomnia and distressing paralysis agitans. Gave bromide potassium $\bar{s}$ ss, tinct. lupulin, $\bar{s}$ i, thrice daily. Patient in hospital under treatment for partial paralysis of traumatic origin.

John Kind, admitted to bed 303 October 13th, second day of attack. Case progressed towards convalescence very satisfactorily, but patient went out without sanction on 20th, and was speedily brought back to suffer his self-inflicted penalty of interrupted convalescence. He remained under treatment until January 11th, for diarrhœa, vomiting and violent paroxysms of fever, terminating in profuse sweats. The treatment consisted of quinine, chalybeates, mineral acids in bitter infusions, and a careful regulation of his diet.

That the pathological phenomena of yellow fever take their point of departure in perverted chemistry, is a proposition now generally admitted. But in what these errors of the chemistry of the economy essentially consist, will not be explicable until the nature and mode of action of the specific poison are unfolded. One of the earliest and most prominent of its effects, seems to be a remarkable disqualification of the blood for the discharge of its great functions as a dispenser of nutritious material, possibly of oxygen. We find as an almost universal resultant of this influence, that the dynamical forces of the economy are reduced to the lowest minimum compatible with the support of life. It is be-

cause of this condition—this silent but dubious equipoise between the vital powers and an unknown but potent toxic agent—that a most sagacious observer remarked, that the “successful treatment of yellow fever depended more upon the observance of *little things* than that of any other disease.”

The case of Patrick Conley was pointed to as illustrating the truth of this remark. Had he received the requisite attention earlier, there is no good reason for supposing that the case would not have resulted in recovery. The patient was a man of unusual physical development and vigor, but it is against all medical philosophy and all our knowledge of the action of the “*vis medicatrix naturæ*,” to believe that patients are more liable to die of yellow fever because they are more healthy at the period of attack. Persons in the full tide of health, and especially those whose occupations or imprudent habits devolve upon them an increased liability to derangements of function, are more apt to be guilty of indiscretions which may invite attacks of this epidemic, and which render them more hazardous when they do occur. Another fact which, in all probability, is fully as operative in increasing the mortality among this class of persons is, that they are more likely to neglect the first stage of the disease, during which the injury it inflicts is almost wholly wrought. It is, therefore, not because these persons are in strong health that they fall victims to yellow fever, but because derangement of one or another function or organ so complicates some state in the morbid process as to give a fatal conclusion to the case. It may be true that certain morbid agents act with more energy in states of the blood existing in plethora, or even in high health, and I shall not be understood to deny the common allegation that the poison of yellow fever belongs to this class. But if this should be allowed to be the case, and the admission granted, that by reason of more rapid multiplication, or other cause, this poison obtains greater intensity of action in previously healthy subjects, the proposition is no less true, that its removal or destruction depends upon healthy function, and takes place with a certainty and rapidity proportionate to the number and importance of the functions unimpaired.

It was long since held, and has recently been eloquently re-

iterated by Prof. Dickson, that the action of the *vis medicatrix naturæ* is vigorous and efficient in direct proportion to the number and importance of those functions whose integrity remains unimpaired during assaults of disease—that in truth the *vis medicatrix*, viewed as an agent capable of resisting or curing disease, is only the aggregated force of healthy functions, to the sum of which each normally working organ contributes, as a more or less important factor. In a physiological aspect, different functions possess an importance more or less fixed and absolute, while in pathological states the scale of importance is liable, with respect to many of them, to be shifted accordingly as the integrity of a particular function may be more necessary to recovery from a particular example of disease. These observations seem eminently applicable to yellow fever. The great indication of cure is conservation of function, until nature rids the system of the *materies morbi* after her own methods. The term conservation of function should be understood to imply normal activity, not excessive activity. For example, the easy production of diaphoresis in yellow fever may be interpreted as an indication, that this is Nature's mode of eliminating the poison, and that therefore activity of this function is a paramount consideration in treating the disease; yet, all experienced physicians know how frequently errors are committed in directing efforts at cure solely to this point. The deluge of diaphoretic draughts poured into the stomach induces fatal irritability; the profuse perspiration exhausts the patient, and, perhaps not the least of the evils, the excessive functional activity of one class of organs destroys the balance necessary to the general conservation of healthy function.

The propriety of exhibiting quinine as an initiatory step in the treatment of yellow fever is a question which has involved considerable discussion. All physicians will admit the indications for quinine in cases supposed to be commingled with malaria, and a large number prescribe it in congestive cases, leaving the question open as to the presence or absence of the malarial element of disease. But to present the question properly, it is necessary to exclude these cases, and enquire whether any advantage and what advantage is to be expected from its use in the treatment of yellow fever as an essential disease.

Neither this nor any other drug hitherto recommended is known to possess any quality antidotal to the poison of yellow fever. Yet there are certain pathological conditions connected with the disease in which the use of quinine seems productive of benefit. First, it is prescribed by many experienced and judicious practitioners, as customary initiatory treatment. It is then given in decided doses, repeated at such intervals that $\mathfrak{D}i$ to $\mathfrak{Z}i$ may be exhibited in 6 or 8 hours, and is supposed to act beneficially, through its influence upon capillary circulation and upon diaphoresis. This latter function is surely modified by quinine—modified not so much in being rendered more profuse, as in being rendered more uniform and persistent. The opponents of this practice, who appear to me more numerous than its advocates, charge to its use the production of gastric irritability, which is unquestionably a serious evil as well as a possible result from its use. They likewise bring against it the more questionable accusations of producing cephalic determinations and gastric inflammations. I have had no reason to be dissatisfied with my practice, which has been to give grs. xv to $\mathfrak{D}i$, in those cases which I saw in the early hours of the febrile paroxysm, and in which an irritable stomach did not forbid its exhibition. If gastric irritability does exist, or there is fear of producing it, all the good effects of quinine can be attained per rectum, and its evil results avoided.

There is less disagreement in the profession as to the applicability of quinine to meet various indications occurring in the late stages of yellow fever. Not infrequently febrile exacerbations of a periodic character complicate the approaches to convalescence; the control of quinine over these is undoubted. Its utility as a general tonic in prolonged debility is unquestionable, and its local influence upon mucous surfaces in the cases of dyspepsia following in the wake of yellow fever may also be beneficial.

The other measures of treatment enjoined in my wards, during the febrile paroxysm were to free the bowels of their contents with from $\mathfrak{Z}ss$ to $\mathfrak{Z}i$ of castor oil, or if sick stomach rendered oil inadmissible, by means of enemata. In one case, in consequence of frequent vomiting, two doses, each containing calomel grs. v, bi-carbonate soda grs. v, were given at intervals of three hours with manifest advantage. Theoretically,

the saline cathartics should possess advantages over other purgatives in yellow fever, because they relieve engorgements of the intestinal capillaries by serous effusion, but practically their want of uniformity of action is an insurmountable objection to their use. No efforts were made to abridge the febrile paroxysm by arterial sedatives. Solution of acetate ammon. or potash, or light draughts of acidulated drinks, aromatic infusions, warm or cold as preferred, or simply cold water, with warm pediluvia and tepid sponging, constituted the sum of treatment ordinarily addressed to the febrile stage.

After the termination of the fever, the great desideratum is to restore the composition of the blood to its healthy standard. No doubt this end involves both a process of addition and one of subtraction, but we know too little of the nature of the latter process to attempt its formulization, consequently we direct our energies to the attainment of the former point of reconstruction, and leave the latter to be accomplished in train, by retrograde nutrition. The means instituted for the purpose of direct nutrition must be guarded by more than ordinary circumspection. The functions of the stomach are nearly always imperfectly performed, either because of structural changes or from failure in the production of gastric secretion by reason of defective nerve supply. No formal rules can be laid down for the guidance of the inexperienced practitioner, in respect to the character or amount of nutrition to be allowed his patient. It had better be given in concentrated and fluid form, so that the stomach shall not be at any time unduly distended by the quantity requisite to nourish the patient, or taxed by long processes of digestion. Alcoholic stimulants, and especially the effervescing fermented drinks, are nearly always grateful, and are sometimes positively beneficial.

Success in treating yellow fever is closely connected with the attention bestowed upon the apyretic stage. It therefore affords a test of the degree of medical skill brought to its management. The deceptive calm, which tempts the unwary physician to think that his professional ministrations have reached a happy conclusion, and tempts the patient to commit the fatal error of quitting his bed, should never throw us off our guard or occasion a relaxation in our attention to patients.

Very minute doses of morphia or some other form of opiate, were sometimes of great service in quieting irritable stomach in any stage of the disease. Good effects were also obtained from opium in the relief of another train of symptoms which not infrequently complicated the calm stage. I refer to delirium and insomnia; no doubt referable in very many instances to exhaustion or innutrition of the centres of grey matter. It is of much importance, before prescribing it, to determine that the delirium or insomnia is not due to uræmia or other blood-poisoning. All therapeutic observation teaches that opium is not antidotal to any form of toxæmia, and is pernicious to most examples, because of its immediate interference with functional activity and processes of elimination.

It is more than likely that bromide of potassium will become serviceable in relieving these conditions, I had an opportunity to observe its effects as prescribed by Dr. Smythe, House Surgeon of Charity Hospital. It was also prescribed for one of the cases treated in my wards. It has one unquestionable recommendation,—that of producing no disturbing or injurious effects, and the class were specially admonished that, if they limited their remedies to those only which possessed this qualification, the list applicable to the treatment of yellow fever would be few in number.

The cases of acute dysentery require no particular comment. All recovered under the use of saline cathartics, opiates and warm fomentations over the abdomen. One case of chronic dysentery was discharged in an improved condition. Post-mortem examination of the fatal case showed extensive ulceration of the large intestine.

What proportion of the cases of acute diarrhœa were dependent upon the epidemic influence of cholera, it is impossible to determine. As the greatest number of the cases occurred during the early part of the winter, when cholera existed as an epidemic, it is reasonable to suppose that some at least were due to its influence. All the cases resulted in recovery; the treatment employed being in most instances $\bar{3}$ ss doses of the following solution: R. bicarb. potas., tinct. opium, aa $\bar{3}$ i; peppermint water $\bar{3}$ ii; to be repeated every two to four hours.

Chronic dysentery and chronic diarrhœa are among the most

hopeless examples of disease we are called upon to treat. If the results of cases observed during the session were more than usually favorable, it is probably owing to the fact that they were admitted to hospital in earlier conditions of the disease than usual, and not to any improved or more successful mode of treatment.

More extended experience in the treatment of chronic diarrhœa confirms an opinion long held, that more can be accomplished in effecting permanent cure, by careful and judicious adaptation of the diet than by the exhibition of drugs. It is difficult to separate the various elements which enter as factors into the pathological condition of different cases of diarrhœa, so as to accord to each one its due degree of influence. Excluding those cases in which the cause is ascribable to structural alterations of the mucous surface from inflammatory action of whatever grade, there are many instances of this disease liable, like the former class, to prove fatal, and yet whose pathology is but little understood.

Some of these cases may find their proper explanation in the existence of a state of hyperæsthesia of the nerves distributed to the muscular coat of the intestinal walls, while others seem connected with alterations in the gland structure of the bowels, and death takes place from inanition, although the diarrhœa may be arrested.

Many of the members of the class will be able to recall a case of diarrhœa in the person of an Irish sailor twenty-eight years of age admitted to bed —, ward nineteen, on the 30th day of January. This case was diagnosed as depending upon the last mentioned cause, and the attention of the class was invoked to its course and post-mortem appearances. The treatment at first consisted of five grains of bismuth with one eighth grain of morphia every four hours, until gastric and intestinal irritability was somewhat relieved, when the intervals were increased. In a day or two all medication was suspended, except fifteen grains perchlorate bismuth twice daily and an anodyne enema or suppository, when the frequency of the dejections demanded. A great variety of expedients was resorted to for the purpose of securing the nourishment of the patient.

The diet ordered him consisted of boiled milk, milk punch,

milk and lime water, eggs, soups and concentrated meat essences. Perhaps it may be affirmed that the use of Liebig's Restorative Soup for Invalids was better adapted to his case than any other one article of diet, (see fifth edition of Tanner's Practice, page 713.) The patient was extremely irritable in temper, and could not be induced to take cod-liver oil. The great care bestowed upon this patient by Dr. Kelly, my ward assistant, by the faithful nurse in that ward, and in the preparation of his food by the Sisters, prolonged his life for more than two months.

Prof. Chaillé made the post-mortem examination without finding any evidence of inflammation, ulceration or other structural lesion to account for death.

The following table shows the name, age, date of admission, and death or discharge of the cases of cholera in my wards:

NAME.	Age	Date of admission.	Date of death	Date of discharge.	REMARKS.
Z. Bird.....	28	Nov. 9	Nov. 10	.....	Died in Collapse.
J. Carr.....	18	" 14	" 14	.....	" "
G. Harper.....	25	" 20	" 20	.....	" "
C. Morris.....	23	" 28	.....	Dec. 3.	
C. Snyder.....	15	" 28	Dec. 1	.....	Admitted in consecutive fever. Died comatose.
P. Harrison.....	30	Dec. 2	" 5	.....	Imperfect reaction, fetid sanguinolent stools.
G. Burbridge.....	25	" 3	" 3	.....	Collapse.
W. Barbor.....	35	" 17	" 18	.....	"
W. Wilson.....	29	Jan. 10	.....	Jan. 14.	
W. Tucker.....	25	" 18	.....	Feb. 1	
J. Cayetta.....	24	" 22	Jan. 26	.....	Collapse-imperfect reaction—sanguinolent stools.
C. McQuade.....	22	" 21	.....	Feb. 25.	Opiates, astringents, careful feeding.

Statistics made up from groups of cholera cases, arranged with reference to particular modes of treatment, possess but little practical value; I have therefore tabulated these cases, for the sole purpose of aiding the notes or the recollections of students in individualizing their observations. I had no specific or exclusive method of treatment to impart to them; but while admitting with Dr. Wilks, that "we know of no medicine which will astringe cholera," I hold that all experienced physicians are able to recall cases which have amended in such direct obedience to the laws governing the action of certain medicines they have exhibited,

that they feel assured the amendment was brought about by the remedies in question. Much skepticism has been engendered in the profession in regard to the efficacy of cholera practice, because of the recorded instances of high death rate under every variety of treatment. Even after admitting the numerical accuracy of these statistics, they cease to exert such an effect when we take into account the great difference in the mortality rate of different epidemics. It may also be stated that, if the observations of Lionel Beale become a law of cholera pathology, the extent and gravity of the pre-existing structural change of intestinal villi will be supposed to have very much to do in determining the result in individual cases, as well as in producing increased liability to attack. The following extract will show, in the briefest manner possible, the result of Dr. Beale's microscopical researches in regard to cholera: "In almost all the cases of cholera I have yet examined, there is evidence of chronic structural change in the *tissues* of the intestines, and I think we shall be led to conclude that in most of the cholera victims important morbid alterations have been going on for months, and in some instances for years, before death. In some cases it is probable that, had the individual escaped cholera, he must have succumbed to some other malady within a short period of time." These observations must not be understood to contravene the well admitted theorem, that cholera has its own specific poison, whose presence is a *sine qua non* to the existence of the disease. The pre-existing tissue-changes may affect the receptivity or "*capax morbi*"* of persons in whom they exist, but they cannot originate cholera *de novo*. These discoveries do, however, afford the most reasonable explanation of the remarkable differences in respect to individual liability to invasion, which we observe in all cholera epidemics, notwithstanding apparently equal degrees of exposure. This personal difference, as it respects receptivity or resistance, is sometimes referred to moral influences, and has been explained by supposing that mental anxiety or dread is a predisposing cause. We cannot for a moment admit that any degree or phase of psychical influence is capable of creating the specific cause of cholera. It is therefore reasonable to infer, that mental apprehensions, by depressing nerve function and vital forces, exert a much more

* Prof. Haughton.

important effect in determining the issue of cholera attacks than in inviting them.

The treatment recommended for the active stages of cholera regarded the leading indication to be limitation of the discharges. All cases of diarrhœa admitted during its prevalence were treated with great promptitude by opiates and astringents. There is no proposition accepted with greater unanimity in the profession than the amenability of choleraic diarrhœa to medical treatment. This proposition cannot be invalidated by alleging that the cured cases were not premonitory to cholera, for too many instances are recorded of the prompt arrest of cholera visitations in armies or beneficiary institutions by establishing compulsory treatment of all attacks of diarrhœa. All the prescriptions made for the arrest of diarrhœa contained opium as the leading ingredient. The form most frequently followed was the tinct. of opium with bicarbonate of potash and peppermint water, as found on a previous page. Essence of ginger was occasionally added, and if there existed any tendency to cramps, chloroform was joined with the prescription. My experience does not teach me to believe that sulphuric acid possesses any specific control over choleraic discharges, but it is unquestionably a valuable and agreeable prescription. Some cases of developed cholera were treated by morphia, given in suitable doses and at suitable intervals, and sulphuric acid lemonade. The usual formula by which this was made was—*R.* Sulphuric acid (dilute), $\mathfrak{z}\text{ii}$; syrup ginger, $\mathfrak{z}\text{ii}$; water, $\mathfrak{z}\text{iv}$. Mix. Tablespoonful to a pint of water for a drink, or a tablespoonful every two hours.

The treatment of developed cholera, dating the commencement of this stage from the period when the ejecta were rice-water in appearance, differed from that of the preliminary stage in energy rather than in character. Whatever theory may be entertained in regard to the eliminative nature of cholera stools, collapse and death bear too decided a relation to the amount of ejecta to justify their encouragement as the rule of cholera practice. Although almost all correct observers admit that those cases of cholera which have received hypermedication in the form of opium, chloroform, brandy, and every species of stimulant which can be gotten into the stomach, if they recover at all, are more sure to have troublesome symptoms during the stage of restitution; this fact should not be seized upon as exhibiting proof that the

sequelæ were produced by confining cholera poison in the system. It is more than probable that similar results would ensue with equal certainty upon immoderate dosing with such toxic agents, whenever the blood was so altered, by loss of its watery portions, as to clog those processes by which it rids itself of useless or hurtful material.

The supervention of collapse was generally an indication for suspending the use of medicines. Collapse arrests the choleraic process of serous effusion with the same certainty that syncope puts a stop to true hæmorrhage. The treatment of this condition was therefore confined to efforts to nourish and preserve warmth. Venous injection was not practiced, although held to be a justifiable measure under proper circumstances. The ingredients composing B. W. Richardson's artificial serum, or "blood food," together with an instrument for its injection, were prepared by Prof. Mallet, so that it might be used without delay, but no case suitable to its use occurred after this period. Subcutaneous injections were not resorted to, because not found necessary.

The patient admitted during consecutive fever was a fine-looking lad, fifteen years of age. The history obtained of his case was imperfect, but led to the supposition that he had been partially, yet not fully, collapsed. When admitted he was somnolent, but coherent when aroused; the eyes were injected, pupils thought to be somewhat contracted, but not especially abnormal; carotids pulsating strongly; tongue red and dry; skin dry; urine passed in bed, but apparently sufficient in quantity. The patient stated that incontinence of urine during sleep had always been an uncontrollable habit. On the day after admission the patient was less somnolent and seemed better, but the apparent amendment existed for a short time only. On the third day after admission he became comatose, and died without convulsions on the fourth day of treatment, or sixth, dating from period of first attack. The treatment consisted in diuretics, diluent drinks, sponging the surface with warm water, cold to the head, and careful instructions as to nourishment. We are not warranted in assuming that death in this case was due to uræmic intoxication. The secretion of urine was not suspended or greatly diminished until shortly previous to death. It was found impossible to procure any specimen for the purpose of determining whether or not it was albuminous. The prominent symptoms are those described

by Worms as referable to turgescence of cerebral capillaries from thickened blood—essentially congestive apoplexy.

The cases of erysipelas were intercurrent, both occurring in the same ward and within a few days of each other; one in the person of a patient under treatment for anæmia, the other being under treatment for pulmonary phthisis. They ran a favorable course, having been carefully watched over by my ward assistant, Dr. McNeil. The treatment consisted of mur. tinct. iron and chlorate potass., with lead lotions topically.

The case which was diagnosed as “gonorrhœal rheumatism,” was a sailor, aged about 40, occupying bed —, in ward —. He had suffered five previous attacks of gonorrhœa, in each instance accompanied by a rheumatic affection of one or the other lower extremity. In the present attack the ankle and knee joints of the same leg were the seats of the local inflammation. It was therefore not strictly mono-articular, which some observers make an essential point of diagnosis, but it is equally true that even in this subject there was not now, nor had there ever been, that tendency to migratory invasion of a number of joints usual in true rheumatism. No tendency was shown to implicate other structures than the articular in the morbid process. It was taught that the pathology of this case depended upon the influence exerted on the blood by certain unknown products of the urethral inflammation. Whether this influence was merely a derangement or alteration of blood elements due to its passage through diseased structures; or whether some albuminoid or other products of inflammation obtained admission to the channels of circulation, and in that manner gave rise to the systemic disorder, is an unsettled point. The latter seems the more reasonable view, and in that aspect the disease becomes in its essential pathology a *quasi* pyæmia, and calls for similar treatment. This consisted of iodide of potassium, in ten-grain doses, thrice daily, chalybeates, quinine and vegetable bitter infusions, etc. It was inculcated as better practice to *cure* the co-existing gonorrhœa, instead of encouraging urethral discharge, under the opinion that its cessation had some influence in originating or aggravating the rheumatism. It is much more reasonable to think, with M. Rollet, that the abatement of the gonorrhœal flow coincidentally with the development of the rheumatism is rather the result than the cause of this constitutional manifes-

tation. The patient had likewise ophthalmia, for which he was treated by Dr. Pope, who may think the case sufficiently interesting to refer to it in his clinical remarks.

The cases of alcoholism were due to acute poisoning from over-indulgence in drink. They were treated with laxatives, diuretics and low diet. This treatment rested upon the assumption that the pathology was empoisoned blood, not alone from presence of alcohol, but in part due to retarded metamorphosis and altered secretion and excretion. When restlessness or insomnia existed to a great degree, efforts were made to induce sleep by other agents than opium. The following prescription often answered this purpose well: *R.* Bromide potass. ʒss.; tinct. lupulin or tinct. hyoscyamus ʒi; water, ʒi. *M. S.* To be taken at bedtime.

The cases of acute rheumatism were treated, for the most part, with alkalies and opiates. The alkalies prescribed were preferably the bi-carbonate, the acetate and the nitrate of potash, each given in scruple doses, repeated every two to four hours persistently for the first two or three days of treatment. Whenever pain was a prominent symptom in the case, opium was given in quantity sufficient to subtract this element of disease. Quinine was given in every case, and generally with marked benefit, although the amendment was sometimes only temporary. It is most likely that quinine is valuable for the treatment of rheumatism in virtue of its sedative properties, and with this view of its mode of action I gave it in decided doses and quantities. A very common prescription was to give five grains conjoined to each dose of alkali, until its physiological effects were pretty well secured.

One case of acute rheumatism deserves a passing notice, on account of a course of experimental medication, to the results of which the attention of the class was called. It was one of those not uncommon examples of rheumatic fever marked by frequent exacerbations, or recurrences of both general and local manifestations of disease. The probability that the pathology of rheumatism consists in excess of lactic acid is now generally admitted. An ingenious author supposes that the fever of acute rheumatism destroys this accumulation of lactic acid, by means of the great increase of oxydization which always obtains under its influence, and thus rheumatic fever becomes corrective of its own essential cause. He accounts in this manner for the clinical fact,

that those cases of rheumatism in which the fever is mildest are usually the cases most apt to be marked by returns. With a view to test the applicability of these propositions to bedside practice, the patient, with his own consent, was submitted to a course of treatment designed to increase the oxydating processes of the economy. To this end, perchlorate of potash was given in ten-grain doses thrice daily. It was simply an effort to substitute the effects of a purely chemical action of medicine for the failure of a hypothetical natural process of cure. The improvement of the patient for some ten days was extremely flattering to hopes of a successful experiment, but after this other relapses occurred, in spite of the persistent use of various highly oxygenated medicines.

Chronic rheumatism afforded some good examples for its study. The best supported doctrines of its pathology indicate that it differs from acute rheumatism only in being engrafted upon some state of cachexia general to the system. The prominent clinical facts of its greater seriousness as a joint disease, and its lessened importance as it respects implication of vital organs and destruction of life compared with acute rheumatism, determine the difference in therapeutics. The leading points of treatment instituted were directed against the underlying cachexy. Quinine, iron, iodide of potassium, cod-liver oil and nutritious diet were the staple remedies. Whenever local inflammation, and especially effusions in the articular or peri-articular structures threatened damage to joints, blisters were applied, either in close proximity to or directly over the affected structures. When pain was troublesome, it was assuaged by opium. If the bowels were inactive, solutions of bi-tartrate of potash or of sulphate of magnesia were exhibited, until this condition was relieved. If there was furred tongue, with want of appetite, light mercurials were prescribed. Nothing justifies a belief that mercury exerts any directly curative influence upon the cachexy of chronic rheumatism. It is therefore probable that its good effects are due to its action in awakening renewed energy in the nutritive processes of the economy.

Five of the thirteen cases of pulmonary consumption are tabulated, for the purpose of presenting some of the leading practical points connected with them, with the greatest achievable economy of space.

NAME.	AGE.	Date of Admis.	HISTORY AND SYMPTOMS.	Weight	Temperature.	Date of Observation.	PHYSICAL SIGNS.	sult
John Lewis.....	27	Dec. 2	Development insidious five months before admission. No family tendency; no antipathy to fats or dyspepsia—Troublesome cough; mucopurulent expectorated. No hæmoptysis. Pulse 100; respirations 29.	136 136 138 141	99 98.9 98 98	Jan. 19 25 31 Feb. 1	Mobility of chest wall lessened on right side. Percussion tympanitic, with distinct, cracked metal sound, in second intercostal space, right chest. Amphoric voice, and respiration heard anteriorly and posteriorly over same region. Exaggerated respiration over summit of left lung.	Discharged March 16.
Thomas Quinn.....	34	Nov. 10	Nine months before admission had attack of pneumonia. Sick since that period. No family tendency. Much cough, with copious purulent sputa. No hæmoptysis. Pulse 98; respirations 21. Appetite poor; congenital dislike of fatty food.	137½ 138 138 140	99.04 98 98 98	Jan. 6 19 31 Feb. 16	Mobility of right chest wall lessened.—Wavy inspiration and tubular breathing over apex of right lung. Percussion resonance diminished over whole right lung—flat in axillary line at fourth intercostal space, where cavernous breathing is heard.	Discharged March 16.
John Sullivan.....	27	Dec. 18	Ascribes illness to a severe cold contracted nine months prior to admission. Severe cough. Expectoration of frothy mucus, with frequent attacks of hæmoptysis. Pulse 94. Appetite and digestion good; weight in health 140lbs	123½ 125 124 123	99.2 98.8 99.5 99.6	Jan. 18 25 Feb. 8 16	Broncho-vesicular breathing below right clavicle. Expiration prolonged. Vocal resonance exaggerated. Percussion gives diminished resonance at right infra-clavicular region. Left lung, negative results.	In Hospital.
James Croy.....	34	Nov. 20	Disease developed insidiously 19 months before admission. One brother died of phthisis. Troublesome cough; purulent expectoration; no hæmoptysis; pulse 106; respirations 24. Appetite variable, and antipathy to fats.	100 101 103	98.8 99 98.	Jan. 19 31 Feb. 16	Wheezy sounds connected with inspiration at apex of left lung. Increased vocal resonance posteriorly at summit of right lung. Percussion resonance increased over anterior upper part of right chest, referred to emphysema.	In Hospital.
Henry Armstrong.....	40	Dec. 10	Dates sickness from cold two years before admission. Both parents and sister died of phthisis. Cough and abundant purulent expectoration; frequent hæmoptysis since August; voice hoarse, strong dislike for fats; acid eructations; pulse	121½ 123 125 116½	100.4 99.4 99. 102.	Jan. 5 18 25 Feb. 8 Mch. 7	Cavernous respiration and voice more strongly marked at second intercostal space on right side, and in right sub-scapular region. Distinct murmur with second sound of heart, and most distinct under sternum.	Died.

The table inures to the same conclusions which would obtain, if the whole number of cases were included. It illustrates the connection as cause and effect between elevated temperature of the body and retrograde assimilation. In my clinical lectures great importance was attached to observations of temperature, whether regarding the diagnosis or prognosis of pulmonary tuberculosis. As it respects the former point, a persistently elevated temperature, not otherwise accounted for, was sufficient to determine a doubtful question. As to the latter point, elevated temperature implies either increased activity in the process of tuberculization or a more intense degree of irritation attending the deposit. Indeed it may be formulized as a pathological rule, that abnormally high degrees of temperature so surely indicate, or induce, serious lesions, that the physician should regard the continuance of such a state as a harbinger of danger directly proportionate to the degree of elevation, and period of persistence.

All the patients were required to be carefully weighed at stated intervals, and their weights recorded. I cannot commend the adoption of this custom too highly. It diverts the attention of the patient from the diseased lungs, and directs it to that more important point, the improvement of his nutrition. Every procurable article of diet or drink promotive of healthy nourishment was urged upon tuberculous patients. They were required to take daily out-door exercise, and were encouraged to co-operate in efforts intended for their cure by exciting their hopes and by keeping them constantly cheerful. Very little was expected from medication, directed for any other end than improvement of the digestive and assimilative organs. When acid dyspepsia was present, the usual prescriptions were thirty drops of aromatic spirits of ammonia in half an ounce of infusion of gentian, or bicarb. soda in some bitter infusion. In failure of appetite, quinine, strychnia, or the mineral acids in infusion wild-cherry bark or vegetable bitters were found to be valuable prescriptions. Troublesome cough was met by light opiates or other vegetable narcotics, or inhalations of medicated vapor. The latter method often allayed the harassing cough due to bronchitic irritation, when other measures would totally fail.

The two cases diagnosed as scrofula had both suffered from

ulceration of the cervical lymphatics, and were both strongly marked with those "evidences of innutrition," which, as Niemeyer justly observes, characterize the serofulous diathesis more than all other indications.

The diseases of the nervous system illustrated remarkably well the contrast of symptoms which generally obtains between those examples unquestionably due to alterations of nerve structure, and those ascribable to various forms of irritation whose mode of impression and lesions are as yet undiscovered. The hemiplegia was referred in three instances to effused clots; in the fourth, conjecturally, to embolic plugging; yet no one of these cases exhibited the violent outbreak of symptoms present in those examples of neuropathy in which mere nerve irritation gave rise to exaggerated or disordered function. It is the difference in dynamical manifestations between destruction of tissue on the one hand, and perversion of normal function on the other. It may be further added that, "in those diseases of nerve function which seem most certainly ascribable to irritation, neither the extent nor the intensity of lesions of nerve structure seems to bear any definite proportion to the degrees of resulting irritation." Some unknown state of the nervous system, or mode of impression exerted upon it, determines not only the nosological complexion of the symptoms resulting from irritations, but their intensity likewise. Thus the most violent and interesting case of epilepsy was shown quite conclusively to be due to the irritation set up by the presence of a tape-worm; but it is beyond all human explanation, that the presence of a tenia should, in one instance, produce frightful fits of epilepsy, in another chorea, and in a third no manifestations whatever of nerve disorder.

This patient had undergone tenicide treatment in another ward, resulting in the discharge of an unknown number of segments of the worm. When transferred to my care he complained continually of epigastric uneasiness, and was morbidly anxious upon the subject of dislodging his supposed tenant. The course of treatment ordered was calomel and rhubarb aa. grs. x, to be taken at bedtime, and a similar portion to be repeated at the same hour the following evening, with ζ ii pumpkin seed in emulsion to be taken during the interval. He was seized during the

night with epileptic convulsions unusually violent in character, and returning so frequently that Dr. Kelly thought it proper to give him chloroform and prolong its anæsthetic influence for some hours. I justified his practice, notwithstanding the opposition with which it is regarded by high authority. It has the sanction of Brown-Séquard, and the still superior merit of having held the convulsions in complete abeyance without any appreciable bad effect.

During his convulsions the patient bit his tongue severely, and difficult articulation, amounting to an almost complete loss of faculty of speech, followed and still remains. This evidently proceeds from paralysis of organs concerned in vocalization, and, together with the tongue-biting, points pretty surely to the medulla oblongata as a centre of irritation. Violent maniacal excitement followed the fits, and even to this period his mental condition and imperfect vocalization prevent any clear information in reference to sense of hearing and taste. Deglutition is performed in that convulsive manner which we define by the term "bolting." This patient had never been the subject of any form of convulsive seizure previously to this time. The urine was never found saccharine. The treatment consisted of $\mathfrak{ss}$. doses of bromide of potassium, in conjunction with $\mathfrak{z}$ i syrup of lactucaria thrice daily, and pills of gr. i protiodide of mercury and grs. ii of extract of conium, given nightly, or sufficiently often to preserve solubility of bowels. Belladonna, in one-third grain doses, thrice daily, and one-twentieth of a grain of strychnia, were substituted for the first prescription after a few days. When the diminished heat of the head and lessened redness of the conjunctiva indicated subsidence of cerebral vascular turgescence, tinct. digitalis was prescribed in $\mathfrak{z}$ i doses, three or four times daily. A blister was applied to the back of the neck and cold to the head. The patient has had two or three recurrences of the convulsions.

The cases of delirium tremens were treated with bromide of potassium, digitalis, opiates, and other vegetable narcotics. The worst case was attended with obstinate insomnia, delirium and aphonia. The prescription which brought the most manifest relief in this case was bromide of potassium, $\mathfrak{zss}$; tinct. digitalis, $\mathfrak{z}$ i; water, $\mathfrak{z}$ iii. Mix. Tablespoonful every fourth hour. Taking

a survey of the great number of patients for whom I have prescribed digitalis during the winter, I can recall several who continued to walk about the wards and hospital grounds while under its use, and yet no fact has come to my knowledge confirmatory of the observations of Dr. Maudsley. In his excellent treatise on the "Physiology and Pathology of the Mind," this author says: "I believe that, though a patient who has taken large doses of digitalis may be safe while he is lying down, he is sometimes in no small danger of fatal collapse if he starts up or runs about in an excited manner." A highly intelligent medical gentleman of this city (Dr. S. A. Smith), has observed a fact which leads him to concur in this opinion.

The case of traumatic tetanus was treated by Dr. Ernest Lewis, and resulted in recovery. The leading features of treatment were persistent use of bromide of potassium, quinine given to cinchonism two or three times during the progress of the case, and mitigation of the most violent spasms by means of chloroform. The patient was well sustained by nutritious aliment, and kept in perfect isolation and quietude. In this case the physician wisely employed his skill in *mitigating* the violence of symptoms, and in not attempting to force their cure. If tetanic convulsions can be held in such a degree of control, that they shall not occasion death by fixation of respiratory muscles or by exhaustion, the morbid phenomena gradually decline, and the case terminates in recovery by spontaneous subsidence of the disease.

The case of chorea offered such slender hopes of benefit from treatment, that a mere reference to it will suffice. The patient is a tall, loosely-formed youth, 21 years of age. While in the Confederate service in 1863, he underwent a very severe attack of measles, followed by paraplegia. As he recovered from the paralysis, the chorea developed itself, and has persisted for more than three years. The convulsive movements are incessant, except during sleep, and affect all the voluntary muscles. They bear greater resemblance to very exaggerated degrees of paralysis agitans than to ordinary choræic convulsions. Walking cannot be performed without the assistance of a nurse, or some form of support supplemental to the lower extremities. With such history and symptoms we could not reasonably conclude that the

pathology in this case was confined to mere paresis of the motor nerves. Whether we take the view that the chorea commenced in centric disease, or that it took its point of departure in the internunciatory system of nerves, there are too many indications that its pathology is now connected with structural changes in the cerebro-spinal axis, to admit of a hopeful prognosis. The treatment was Fowler's arsenical solution gtt. xii, thrice daily; bromide of potassium, 3ss; tinct. hyoseyam, 3i, at bed-time. Strychnia, iron and cold bathing were also prescribed, and the patient enjoined to exert continually efforts of will to gain control over the "delirious muscles."

The following table shows the cases of pneumonia treated in my wards, with location and results:

NAMES.	Age.	Date of Admi'n	Date of Attack.	Lung.	Result	Date.	REMARKS.
Geo. Bradford	51	Nov. 25	Nov. 24	Right	Died	Nov. 30	Tympanitic percussion over upper part of hepatized lung.
Jno. Hawkins	40	Jan. 18	Feb. 12	Double	"	Feb. 17	Pneumonia followed cedema of the glottis and laryngotomy.
Eman. Jomini	66	Jan. 19	Jan. 19	Left	"	Jan. 28	Had been two weeks sick of malarial fever. Died of Asthenia.
James Kelly...	54	Mar. 2	Mar. 2	Right	"	Mar. 14	Old drunkard; under treatment for delirium tremens ten days before attack. Died from dysentery and exhaustion.
John Quinn ...	39	Jan. 23	.....	Right	Dis'gd	Mar. 20	Tympanitic percussion under right clavicle.
W. McCarthy	53	Feb. 28	.....	Right	Died	Feb. 29	Admitted moribund.
Thos. Coleman	20	" 3	Feb. 15	Left	Dis'gd	Mar. 1	Admitted for treatment with malarial fever.

If we rest our estimate of the merits of the treatment adopted in pneumonia upon the results exhibited in the above table, it would appear scarcely proper to recommend its further adoption. But there are facts explanatory of these results. Prominently above all others, it will be remembered that every case except one (James Kelly) was complicated with malarial disease, and that one occurred in a hopeless condition of drunkard's cachexia.

The only case of double pneumonia was developed after the operation of laryngotomy, performed on account of œdema of the glottis. The patient had entered the hospital to undergo treatment for malarial cachexy and enlarged spleen. On the morning of February 9th he complained of sore throat. A very careful examination revealed two trivial papules on the velum palati of the right side, with very little tumefaction or redness. There was not the slightest difficulty of respiration or alteration of the voice to attract especial attention to the air-passages. During the night Dr. Kelly was hastily summoned to find the patient struggling under the most alarming dyspnœa. The finger readily disclosing the cause, he immediately opened the larynx and inserted a canula. The patient was then placed in a curtained bed, and the atmosphere kept charged with aqueous vapor at a temperature of 80°. The case seemed to progress favorably until the 14th, when an increased frequency of respirations and an anxious, flushed face excited apprehensions of pneumonia. Physical examination confirmed the suspicion. There was dulness upon percussion over the base of the right lung, with fine crepitation in the axillary line about the fourth intercostal space. Every possible effort was made to sustain the patient by forced diet, alcoholic drinks, quinine and ammonia, but death ensued on the 17th. Post-mortem examination showed hepatization, involving the third and greater part of the second lobe of the right lung, and a part of the lower lobe of the left lung. It revealed likewise incipient structural changes in the cartilages of the larynx, principally affecting the right half of the thyroid.

The frequency of pneumonia as a consequence of artificial openings in the windpipe is admitted as a clinical fact by many surgeons. Prof. Schub, of Vienna, accounts for it by supposing that the currents of in-going air impinging directly upon the delicate structure of the lungs, instead of being gently admitted through a tortuous valvular apparatus, produce the inflammation by violence of pressure and distension. Whatever may be the cause, every safeguard judged necessary had been placed around this patient.

The therapeutical indications in the cases of pneumonia were so uniform, that there was very little diversity of treatment.

Quinine was given in every case save one, because of an actual knowledge of the presence of a malarial element of disease. This complication in truth determined the nature of the treatment instituted. Ammonia, either in solution of the carbonate, or the effervescing citrate, and small opiates entered into the list of remedies most frequently advised. The last case in the table took ten grain doses of Dover's powder every fourth hour, until the pleuritic pain was lulled. Linseed poultices or flannel cloths wrung from warm water were placed around the chest and covered by oil silk. This practice was commenced early, and persisted in until the process of resolution was well established, or until death. Systematic nourishment and liberal use of stimulants were more or less necessary in every case.

In two of the cases of pneumonia there existed tympanitic resonance on percussing over the hepatized lung. In the first case it was not developed until the third day after the attack, and was most marked in the third and fourth intercostal spaces, a little within the mammary line. In the second case it was present at date of admission, and persisted until date of discharge. In the latter instance it was most marked in the infra-clavicular region, one inch to the right of the sternum.

Whenever tympanitic resonance is found, aeriform collection must be regarded as the postulate of its existence. Either one of five different conditions as it respects the seat of such collections may be conjectured to give rise to tympanitic percussion sounds in pneumonia; first, true cavity; second, air in vesicles in proximity to hepatized lung; third, in the pleural cavity; fourth, in a large bronchial tube perforating the solidified lung; fifth, in the abdominal viscera and transmitted. In each of these two cases the aeriform collection was proven to exist in the hepatized lung, because of its undoubted connection with bronchial respiration. This fact proved also that it did not find its origin in exaggeration of normal vesicular resonance. The only questions of diagnosis then were; is there a true cavity? Is there a dilated bronchus? Is there a large but normal bronchus included in the hepatized lung? The second question was excluded because of the rare occurrence of such events. The alternative therefore was between the first and the last query. The history of the first

mentioned case gave no support to an opinion that the patient had ever been the subject of tuberculosis. The second patient had suffered from cough, with abundant expectoration, night sweats and emaciation one year previous to admission. He had never expectorated blood; his appearance indicated a strumous diathesis, but he denied any family predisposition, and declared that his health had been perfect for six months directly preceding his admission.

The percussion sound differed as it respects quality in the two cases. In the first it was sharper in pitch and transmitted over a larger area; in the second the resonance was somewhat less tympanitic, but still contrasted notably with the dull bass sound produced by percussing for the sake of comparison over a true cavity. In both cases the cracked metal sound was produced when the mouth was open. In both instances bronchial respiration coincided with the tympanitic percussion. In the first case it was more intense and "brassy" than in the second, while in the second these qualities, although modified, still offered points of contrast, when compared at the same moment with the characters of true amphoric respiration. Vocal resonance was exaggerated in both cases; in the former to so great a degree that the clangor of the thoracic voice and its proximity to the ear were absolutely disagreeable. Whispering pectoriloquy was obtained in both cases, but more marked and attended with more soufflé in the former.

Post-mortem inspection in the first case displayed the following anatomical changes: The right lung was hepatized from base to apex, the left was healthy. A former inflammation had united the pulmonic and costal surfaces at the anterior and upper part of the right chest, over a space four inches in diameter. This adhesion was continuous and so firm as to be with great difficulty separated. Directly beneath this patch a large bronchus was situated, with some fourteen lines of solidified lung intervening between it and the pulmonic periphery. The lung presented no evidence of tubercular disease.

There seems no reason to doubt that in this instance the physical signs described had their origin in the bronchus subjacent to the locality where they were most marked. A bronchial tube of sufficient dimensions to contain a collection of air, this air

capable, because of the perviousness of the tube, of being put in rapid vibratory motion, and the increased degree of transmitting power possessed by an unbroken continuity of tissue between the aeriform collection and the ear, constitute a combination of circumstances quite sufficient to account for the phenomena present. Eminent teachers instruct us that contact of the solidified lung with the wall of the chest uniformly gives rise to dull percussion sounds. When this rule does suffer derangement from the accidental location of aeriform collections in a portion of solidified lung in contact with the chest wall, that very circumstance gives intensity to the irregular physical signs and additional interest to the disturbance of the laws of physical diagnosis.

I am not able to affirm a diagnosis in the second case, but the weight of evidence favored the supposition that a true cavity existed.

Want of space compels me to refer the class to their notes or recollections in reference to many important clinical observations connected with diseases of the respiratory system. The cases of pleuritis were typical and instructive; so likewise was the case of emphysema. It will be remembered that marked emphysematous states of lung tissue were found co-existing with two cases of pulmonary phthisis. In both these instances the observation of Pollock seemed to be confirmed, that this by no means usual complication appears to render the progress of consumption less rapid. The diagnosis of œdema of the lungs was made in a case of albuminuria, and confirmed by inspecting the cadaver.

Catarrhal inflammation of the stomach receives but little notice from medical authors or teachers, and in consequence of this fact I was the more careful to invite attention to the clinical phenomena of two very illustrative cases. One case will suffice to recall the symptoms and treatment. A fine-looking youth, sixteen years of age, employed on a steam-ship, was admitted to ward 19 in December, complaining of pain in epigastrium, aggravated by pressure or efforts to cough. He had a persistent sensation of nausea, culminating every four or five hours in an act of emesis, in which a considerable quantity of ropy mucus would be ejected. The acts of respiration were somewhat accelerated and incomplete, because of the pain occasioned by a full inspiration.

Pulse about one hundred, countenance and eyes slightly injected and sallow. The lungs were free from evidence of disease. Much conversation on the part of the patient produced coughing, which did not occur except when provoked in this manner. The treatment consisted of six grains, of calomel uncombined, followed by bi-tartrate of potash, until free catharsis was obtained; effervescing draughts; cold demulcent drinks; ice; light fluid diet; and blister over epigastrium, convalescence was prompt.

The four cases put down under the head of ascites, were simply those examples of hydro-peritoneum in which the cause could not be so conclusively proven as to justify employment of a different classification. In one of these cases the cause was supposed to be effusion from sub-acute peritonitis, induced by a severe attack of dysentery. The accumulation did not manifest itself until late in the progress of the dysenteric attack. It will be remembered that this opinion was arrived at more by a process of exclusion, than because of the presence of the actual symptoms of peritonitis; nevertheless it receives some support from the general premise advanced by Virchow, that peritonitis is more often the cause of ascites than has been supposed. The patient recovered after three weeks' treatment with twenty-drop doses, thrice daily, of mur. tinct. iron, and painting the belly with tinct. iodine.

In another case of ascites the patient had received a gun-shot wound, passing transversely across the abdomen, and apparently including in its course the convexity of the right lobe of the liver, there had been a good deal of laceration of the abdominal parietes and considerable loss of substance. The liver seemed likewise to be reduced in size, indurated and immovably adherent to the wall of the abdomen. The patient had made a good recovery, and was in excellent health until attacked by malarial fever, six months prior to his entrance into the hospital. He had continued to be harassed by returns of malarial attacks until the date of admission. The result had been to produce very marked anæmia and considerable enlargement of the spleen. The most interesting fact connected with the ascites in this case was, that although the accumulation was not very great, the extensive adhesions between the visceral and parietal surfaces had so entirely de-

stroyed the elasticity of the abdominal wall, that the effects of pressure were more troublesome than is usual to very large collections of serum in the peritoneal cavity. Respiration was very much impeded, and the heart pushed far above its normal site. Three pathological states may have had each its respective degree of influence in producing the ascites in this case: first, presumable physical obstruction to circulation from the wound of the liver and the enlarged spleen; second, renewal in mild form of the peritoneal inflammation; third, alterations of the blood predisposing to serous effusion. The treatment was vigorous purgation with compound jalap powder, repeated as often as increased pressure demanded, and restorative measures—quinine, chalybeates, etc.—during the intervals.

The third case was probably due to cirrhosis. The patient was in a dying condition when received in my ward, and when death occurred his friends refused permission for a post-mortem.

The cases of Bright's disease occurred in men of robust frames and originally good constitutions. One had been a farmer, and the other had held some petty office on a steamboat. They had occasionally indulged too freely in alcoholic drinks, yet neither was an habitual drunkard. It has so often occurred to medical observers to find albuminuria connected with this vice, that it is now regarded as its chief cause. That the ingestion of large quantities of alcohol should give rise to diseased conditions of the uriniferous tubules is readily explained by the physiological fact, that the kidneys are the emunctories through which the unchanged alcohol is principally removed from the system. It is a recognized fact in pathology, that those organs which assume the office of ridding the system of the presence of a poison, do so at the hazard of their own integrity. It is, then, perfectly rational to connect the lesions of the kidneys with the office which they execute, of eliminating a poison whose contact is highly irritative to their delicate epithelial structure.

Several clinical facts connected with these cases were worthy of note. First, they illustrated the important fact, that patients may be the subjects of very advanced states of Bright's disease without being cognizant of any renal difficulty. In one of these cases the daily secretion of urine was less than ten ounces, and yet the

patient was not aware of any changes in amount or character of his urine until my investigations determined them. Next, they illustrated the fact that, in advanced stages of the disease, the diminution of the amount of albumen in the urine is by no means an absolute indication of improvement; on the contrary, its diminution, or even disappearance, may indicate the progress of those more profound conditions of degeneration from which recovery is utterly hopeless. According to Cornill, fatty degeneration invariably produces diminution of albumen in the urine in proportion to the degree and extent of the changes it has effected in the kidney. This author also quotes Ranvier, as saying that "albumen and fat do not seem to be formed at the same time and in the same cell." In both of these cases the amount of albumen was greatly diminished for several weeks before death—almost altogether disappearing in one case.

The prognosis of albuminuria depends upon its pathology. There are three morbid conditions which may each determine its appearance: First, altered mechanism of the circulation by pressure; second, alterations of the blood; third, disease of renal epithelium. When due to the first or second cause, it is more likely to be temporary and curable; when to the third, it is always serious. While very little hope was expressed of obtaining benefit from any measures intended to cure these two cases, it was determined nevertheless to try the mode of treatment recently adopted by Niemeyer in several cases of Bright's disease, reported to the medical faculty of Tübingen. This consisted in confining the patient to milk for diet, and in promoting cutaneous transpiration by occasional baths and protecting the surface from cold. No medicines were given, except twenty drops each of mur. tinct. iron and tinct. digitalis, thrice daily. The patient's progress under this treatment was so satisfactory, that I shall not hesitate to adopt it again, and watch its results under circumstances not so decidedly unfavorable.

The cases of diuresis were simply examples of excessive functional activity, and yielded promptly to treatment. One of the patients had fallen from the deck of a steamer into the water, and the disorder was ascribed to this cause. The daily amounts of urine excreted ranged from ninety to one hundred and ten

ounces. The treatment was five grains sulphate of iron and ammonia, three times daily; ten grains of Dover's powder at bedtime, and restriction in the use of water or fluid ingesta.

In the case reported as lardaceous liver and spleen, the diagnosis was arrived at by exclusion. The patient was a seaman, thirty-one years of age. Some, two, or three years before admission he contracted syphilis, for which he underwent a tedious course of treatment. The evidences of syphilitic cachexia were not strongly impressed upon his constitution, and in truth were almost altogether limited to marks of suppuration of some of the inguinal glands. For two years he had suffered frequent but not violent attacks of intermittent fever. When admitted to hospital, on the 24th of October, 1867, the patient's abdomen was very much distended with serum, and this symptom, with enlargement of the superficial abdominal veins and the dull sallow hue of the skin usually co-existing with acholic jaundice led to a diagnosis of cirrhotic liver. The treatment directed for the patient was *mur. tinct. of iron, tinct. digitalis aa ʒi; tinct. nux vomica ʒi* M. S. Give fifty drops three times daily. Also the following mixture was to be taken at will in the course of each twenty-four hours: *R. Bitartrate potass ʒi; infusion juniper berries Oj M* Nitro-mur. acid and salt water frictions were ordered to be made over the region of the liver. After a month's persistence in measures of treatment which did not vary essentially from the above, the patient was completely relieved of the ascites; so that better opportunities were afforded for determining the condition of the abdominal viscera. I may remark in passing, that on more than one occasion I repeated the opinion, that the diuretic treatment had little or no agency in removing the ascites. It is extremely unlikely that any form of medication would increase renal secretion, with such an amount of pressure upon the blood-vessels as must have existed in this case. I supposed the removal of the dropsical accumulation due to relief of the obstructed hepatic circulation, by the gradual enlargement of compensatory channels through which the blood was returned to the heart; and in part perhaps, to an improved condition of the blood, as it respects its own composition. Whatever may have been the cause, after the removal of the serum, the flaccid, thin abdominal walls enabled

us to determine that the liver, especially the left lobe, was much enlarged and *hardened*. This latter condition was rendered obvious, when the lower edge was grasped between folds of the abdominal wall and subjected to pressure. The liver extended laterally to the boundary of the left hypochondrium, and inferiorly to the superior margin of the hypogastric region. Its convexity was very greatly increased, but the lower border retained its normal thinness and sharpness of outline. The right lobe appeared to be diminished in size. The spleen was very much enlarged and unusually resisting to pressure. A well defined fissure not more than one inch in width, separated the two organs, while the lower extremity of the spleen reached the left iliac region. The urine of the patient was normal in quantity and characteristics. The patient's bowels were variable as it respects solubility, but were readily excited by purgatives. Prof. Mallet analyzed two or more specimens of the stools, and found a deficiency, almost amounting to complete absence, of biliary coloring matter. The patient had no indications of tubercles or history of any hereditary tendencies. He stated that he habitually drank whisky, and generally drank it "neat," but denied any excessive use of it. Some months before admission he had suffered pain in right hypochondrium, succeeded by jaundice, which had persisted for a number of weeks. Since the date of first attack his bowels had been in the variable state above described, fluctuating between slight costiveness and diarrhœa. The diagnosis which affords the most satisfactory explanation of the morbid states and phenomena entering into this clinical history, is that the right lobe of the liver has undergone cirrhotic changes and diminution of size, while other portions of this organ and the spleen are the seats of lardaceous deposit, and are enlarged. Dr. Wilks includes in his valuable report on lardaceous disease several instances, in which these two pathological states were found affecting different portions of the same liver, or indeed almost interlacing with each other. The difficulty in arriving at a defensible diagnosis in structural changes of the liver is so well expressed by Dr. Wilks, that I quote the language he employs: "Indeed it is very remarkable that, although liver complaints (as they are styled) are more spoken of by medical men than almost any other maladies

yet that no organ has so few characteristic or positive signs of structural derangement."

Of course, little or no good could be produced from the use of medicines in this case. The perverted chemistry or physiology of these disorders of remote nutrition is too little understood to enable us to premise successful medication. It was thought that some good influence might be obtained by efforts to combat the supposed syphilitic diathesis, and for this purpose one-sixteenth of a grain of bichloride of mercury was given in 3i fluid extract of sarsaparilla, thrice daily. The patient left the hospital during the month of March.

I have exceeded the limits assigned me, and yet have left many interesting examples of disease without notice; but it is to be presumed that a class as studious and faithful as that for whose benefit these memoranda are published, has not failed to derive the full measure of profit from the unmentioned as well as the mentioned cases. It has been my desire to make this, as far as possible, essentially a *résumé* of the clinical facts and precepts brought to the notice of the class; consequently it has appeared to me just as important to recall some of the points of pathological doctrine mentioned in connection with various cases, as the clinical facts. This explains the introduction of speculations as to the nature of the various diseases discussed in this paper.

ART. X.—*Notes on a case of Thrombosis and Embolism, and of other Lesions occurring in Yellow Fever*: By STANFORD E. CHAILLÉ, M. D., Professor of Physiology and Pathological Anatomy, Medical Department University of Louisiana.

THE researches and experiments of Virchow and his co-laborers on the coagulation of the blood in living vessels, and the conveyance of minute clots or foreign substances (whether produced pathologically or introduced experimentally,) through the circulation to be arrested in the capillaries, or other vessels too small for their passage, producing in the tissues supplied thereby hæmorrhagic infarcti, fatty, purulent, and other degenerations, have served as a new era in pathological anatomy; and furnish

positive demonstration of many phenomena, which were before the subject of unsatisfactory conjectures only.

All facts connected with this interesting subject are worthy of record, and the case now reported, deserves additional interest from the fact, that no similar one (so far as is known) has ever been observed or published in connection with yellow fever.

On September 10th, 1867, Daniel Gavin, aged twenty-two, was attacked by yellow fever, characterized by the severity of the symptoms and great prostration. Within a week, profuse and obstinate epistaxis occurred, followed by bloody abscesses on the arms and legs. One of these on the right wrist was opened, and healed favorably. From the 23d to the 27th, præcordial pain and oppression, weak, rapid pulse, dyspnœa, and some ascites were observed. On the 27th occurred paroxysms of dyspnœa and coughing, with viscid expectoration, and a severe chill. The rigors reoccurred on October 8th, 13th, 30th, and November 5th, between which dates the dyspnœal paroxysms were often repeated, and profuse diarrhœa made its appearance. On Nov. 7th he died.

Between October 20th and 30th this patient (not in my charge) was first seen and was then suffering with a paroxysm of dyspnœa, which so seriously interfered with respiration and circulation, that it was confidently believed that the autopsy could be made on the next day. These dyspnœal paroxysms, and the following phenomena gave to this case its peculiar interest. The patient presented a singularly bloated, swollen, livid appearance, *limited to the right* side of the face and head, neck, arm, and upper part, (pectoral muscles chiefly) of the thorax; all of which were very œdematous, and darkly discolored. The swollen superficial veins of these parts were in marked contrast to those of the left side; and though the habitual decubitus was on the right, a protracted change to the left side did not diminish the local œdema and discoloration.

It was evident that such a condition must have for its cause some local impediment to the return of the venous blood from the parts to the right heart, and a thrombus was confidently diagnosed. Confirmation of the diagnosis followed in a few days when the jugular was found hard and corded. The condition of the patient

was such that the application of auscultation and percussion, particularly the latter, was painful, difficult and unsatisfactory; which added to the consideration that a fatal result was not doubtful, caused less thorough examination of the thoracic organs than was needed to decide correctly their exact condition. However, it was established that the action of the heart was weak and tumultuous or perturbed; but no friction sounds nor cardiac bruits were detected. The physical signs of bronchitis and pulmonary congestion were manifest over a large extent of both lungs, but to a greater degree on the left side.

The post-mortem examination was made in presence of the class by the writer, who stated prior to the autopsy, that it was a case of thrombosis with embolism, accompanied by such other symptoms and morbid anatomy as were frequent in blood-poison diseases. That the general symptoms belonged especially to that misnamed disease pyæmia, for which it was better to substitute a more non-committal term, as septicæmia, since modern researches had proved that blood was not poisoned by healthy pus. That those blood diseases which were frequently accompanied by symptoms of pyæmia, were the diseases which were the most often complicated with thrombosis and its resulting embolism. That the fibrin of the blood underwent changes in these diseases—some, as Rokitansky, asserting that it was augmented, others that it was diminished in quantity; but all agreeing that it was impaired in quality; that it was taught, that one of the results of this impairment in quality was an augmented tendency to coagulate—a tendency which the feeble action of the heart and a retarded circulation, always present in these cases, increased. As a result of such change, there sometimes occurred a coagulation of the blood in situ (thrombus), from which particles (emboli) were washed into the circulation, and were necessarily arrested in the first vessels too small to permit their passage. Modifications in the nutrition of the tissues, thus cut off from their nutrient fluid, followed, and thus were formed hæmorrhagic infarcti, fatty degenerations (limited), softening of isolated parts of the tissues, as the cerebral, and multiple abscesses. That the infarcti resulted from occlusion of an arterial vessel by an embolus, thus arresting circulation in all its branches, in which therefore

coagulation took place; and that as arterial vessels branched off divergently from the original vessel as their apex to the periphery as their base, therefore that infarcti were conical in shape with their base towards the surface of the organ affected. That these hæmorrhagic infarcti differed from apoplectic hæmorrhages, in that the blood in the former was inside, in the latter outside of the vessels, and that these infarcti, at first hæmorrhagic, were subject to degenerations, of which the fatty was one, and purulent degeneration a more advanced stage. That, to explain why, when the whole mass of blood had undergone this tendency to coagulation, it manifested this tendency in certain parts of the circulation, demanded a search for local causes, an investigation which often proved profitless.

It was stated, that other anatomical lesions were frequently present, due to changes in the blood, changes not at all understood; and that among these lesions inflammations of the serous membranes were the most frequent. That no undue weight might be given to the occurrence of thrombosis and embolism, it was well to bear in mind that the conditions in which they occurred were generally fatal, even though these complications were wanting. For these reasons, it was confidently anticipated that thrombi would be found in the veins leading from the discolored and œdematous parts, and that hæmorrhagic infarcti with multiple abscesses would be found in the lungs, as embolism was a legitimate child of thrombosis. In addition, that the serous membranes required a close examination.

AUTOPSY.—*Vessels*—The right subclavian and internal jugular veins, from their junction and for some distance of their extent, were found completely occluded, in part by coagulated blood, but in chief by a fluid exactly like *pus in appearance*. This occlusion extended into the terminations of the external jugular, brachial and cephalic veins; and the farther from the heart the occlusion extended, the more the venous contents approached the appearance of coagula and the less of *pus*.

Lungs—Considerable congestion and innumerable multiple abscesses, each containing only a few drops of purulent fluid, were present in both lungs, as also small infarcti. On the surface of the lower lobe of the left lung was found an infarctus fully as large

as a pigeon's egg, indicating the occlusion of a vessel of considerable size.

Pleurae—The surfaces of the thoracic and pulmonary pleurae were extensively and firmly agglutinated by false membranes. In the diminished pleural cavities still remaining was found a considerable quantity of serum and fibrinous coagula.

Pericardium and Heart—Evidences of extensive and severe inflammation of the pericardium existed; false membranes bound it around the base, and also to parts of the apex of the heart. Its cavity was filled with bloody, turbid serum. The endocardium and valves were free from disease, and the vessels attached to the heart contained no coagula of note. Between the pericardium and diaphragm was an abscess containing not less than a table-spoonful of pus.

Kidneys and Liver—The kidneys like the lungs contained numerous multiple abscesses, and like the liver were congested. The liver was in other respects normal.

Brain—Its lateral ventricles contained some bloody serum, and beneath the arachnoid, blood, in small quantity, was extravasated. The cerebral parenchyma was somewhat soft, but uniformly so.

Careful examination failed to detect any other lesions.

REMARKS.—Many eminent authorities have maintained that there is a necessary sequence of cause and effect between phlebitis, thrombosis with embolism, and pyæmia; the first causing the second, and these the last. The facts in the present case fail to support this view, and are better explained by the supposition that the pyæmic symptoms and the thrombosis were both effects of the same cause, poisoned blood; the former being a general, and the latter a local manifestation of this cause. In this case the chief symptoms of pyæmia were well marked antecedent to any signs of thrombosis. Farther, it would be very difficult to believe that the emboli, necessarily conveyed to the right heart could traverse the pulmonary capillaries, and then passing into the arterial circulation be arrested by the renal capillaries only. For the kidneys were the sole organs supplied from the aorta which contained the multiple abscesses or any other of the lesions of embolism—and such abscesses in yellow fever kidneys are not

infrequent, independent of all causes to suspect either embolism or pyæmia. Therefore it is believed that the renal, as well as the lesions of the serous membranes preceded and were independent of the coagula and puriform fluid found in the veins, whilst the local œdemas and pulmonary lesions were caused thereby. To the thrombosis and embolism I was also inclined to ascribe the very remarkable paroxysms of dyspnœa which had been observed.

Too little is known of the pathology of thrombosis to furnish satisfactory explanation, or conjecture even, as to why the blood should have selected the junction of the internal jugular and sub-clavian veins, where local impediments apparently so little exist, as the site of its coagulation. Formerly a local phlebitis was confidently assigned as the cause, but in this as in cases reported by others, no evidences of such inflammation existed. Once it was dogmatically taught that the presence within the veins of a fluid having the appearance of pus was ample proof of phlebitis. Modern pathologists have abandoned this view; for Virchow and others have proved that the internal coat of veins when inflamed never exudes pus;—and Gulliver has demonstrated that the fluid found within the veins though puriform is not pus; that it is coagulated fibrin which has undergone its ordinary degeneration, converting it into a granular oily matter which possesses neither the microscopical nor chemical character of pus, and is the same process by which the fibrinous coagula, which fill up the air vesicles, and thus consolidates the hepatised lung of pneumonia, are softened and removed from the economy; that this change always begins in the centre of the clot and not where in contact with the venous walls; and farther that coagulated fibrin when removed from the body, and exposed to a blood heat begins to soften and to undergo this puriform degeneration in forty hours. Other microscopists have confirmed these views. On such subjects the authority of no one is higher than Robin's, who in his recent work (1867) "*Sur les Humeurs*," dwells with marked emphasis on the assertion, that the pus-like fluid found within veins is degenerated fibrin, not pus; and that such corpuscles as may be present are white-blood, and not pus corpuscles. A recent opportunity enabled me to examine an ante-mortem clot. An incision into its centre disclosed a puriform fluid, (deemed the

surest evidence of an old ante-mortem clot) which under the microscope had not the characters of pus.

The only part now assignable to phlebitis as a cause of thrombosis, and in some cases of pyæmia, is, that by it the venous walls are rendered thicker and rougher, which conjoined to other circumstances promote coagulation. The coagula may undergo softening, and cause dangerous embolism, and as a sequel of this, pyæmia may or may not be produced, depending on unknown circumstances. However indefinite and unsatisfactory this statement may be, it is not the less true that scientific accuracy will not justify any more absolute assertion.

NOTES ON THE PATHOLOGICAL ANATOMY OF YELLOW FEVER.

It is very much regretted that circumstances prevented satisfactory researches into the pathological anatomy of last year's epidemic. Arriving in the city in October, when the fever was on the decline, and finding that post-mortem examinations were prohibited by military authority, little could be done. In all, less than a dozen autopsies were made. The results of these may prove of some interest.

Even recent European authorities continue to repeat in their text books the assertion of Louis, that the "café au lait" liver is the characteristic lesion of yellow fever. Not exceeding one-half the cases examined presented this appearance, and established the fact repeated by every author in this city, that this lesion of the liver, whilst frequent, is not characteristic. These livers were microscopically examined for fatty degeneration, which was found, but by no means in exaggerated degree. Most observers report this condition as constant; but Prof. Riddell found it though frequent, not constant.

La Roche quotes Cartwright and others to the effect that lesions of the solar plexus are constant. It is true that in the tissues around the plexus, as in all similar tissues, as dependent, evidences of hypostasis are manifest; but the nerve tissue itself, examined carefully in six cases might have been selected as perfect types of normal structure.

In no case examined were the kidneys healthy. Extreme friability characterized them all. They were enlarged, congested,

and beneath the membrane forming the pelvis, infundibulæ, and calyces, were found petechiæ, ecchymoses, or other evidences of extravasated blood. In two cases the kidneys presented multiple abscesses, and in several cystic degenerations, which latter however were not ascribed to the yellow fever. In one case coagulated blood blocked up the renal vein of one side; which it was believed was ante-mortem, because the vein was solidly impacted and the clot present on one side only. Prof. Beniss states that his researches show that albuminuria is not constant in yellow fever. That it was present in the first stage in some cases, in the second stage in a much greater number of cases, and very rarely absent in the fatal cases.

It is still discussed whether gastric inflammation is not a necessary lesion, and the cause of some of the chief symptoms of yellow fever. To those unaccustomed to post-mortem examinations, and this exception reduces the number of competent observers to an extremely limited number, no fact seems clearer than that yellow fever stomachs present abundant evidence of inflammation. Its mucous lining is found swollen, softened, eroded, congested, blackened.

The remark is as old as John Hunter, that there are very few dead bodies in which the stomach is not in some degree digested. The post-mortem results of gastric self-digestion are well understood, and are present in variable degrees in all cases—from erosions perhaps invisible to the naked eye, to perforations and the most extensive destructions, not only of the stomach itself, but of the adjacent tissues. If a rabbit be well fed, and then killed, and the body kept at a temperature of 100°F., over night, the most extensive ravages, even to perforation of the abdominal parietes result. But, though these facts are known, very few have habitually observed them in the dead house or laboratory; and therefore their opinions as to the lesions which distinguish gastric inflammation, from the post-mortem changes in the stomach, very variable in degree and totally independent of disease, are comparatively worthless. Rokitsky regards gastric softening as always cadaveric, and of two kinds, the gelatiniform or white, and the black ramollissement. The latter occurs whenever the gastric vessels are gorged with blood; and is the condition most

frequent in yellow fever, of which the only true gastric lesion is vascular engorgement, resulting often in rupture of the capillaries and extravasation of blood; which mixed with and altered by the gastric secretions constitutes the black vomit.

Whenever pathologists admit that the soft, spongy, swollen, bleeding gums so frequent in yellow fever owe this condition to inflammation, then they may admit that the gastric lesions are also inflammatory, but not before. Drake quotes Prof. Stone as reporting, many years ago, in regard to the gastric lesions that they were very marked, especially *when the examination was postponed*. It is not difficult to appreciate the sarcasm lurking in this remark.

ART. XI.—*Cases of Eye Disease, Reported by Dr. B. A. POPE, in Charge of the University Eye and Ear Clinic.*

CASE 1st.—*Traumatic Dislocation of the Lens into the Anterior Chamber. Flap Extraction. Chloroform Administered.*—T. E., aged fifty years. While at a fire, received the stream from the hose of a steam fire Engine against his left eye. The sight of the eye had been previously extremely imperfect. Ten days after the injury he presented himself at the clinic, and was sent to the Charity Hospital. He stated that he had the day before, for the first time, observed that the eye was inflamed. The pupil was completely dilated, and the lens and the iris were both in contact with the cornea. The next morning I found that severe inflammation had commenced. There were intense pain and photophobia, and the upper lid was much swollen. The chemosis was very considerable, but mostly of a serous character. The lens was of an amber color, with but a moderate amount of cortical substance, which led me to believe that it was a case of previously existing cataract, which had been dislocated by the blow received.

The indication was to extract the lens immediately by the flap operation, the lens being evidently hard, though apparently not very large. It was found necessary to make incisions with

the ocular conjunctiva, in order to bring the cornea into view sufficiently, it being partially covered by the swollen and flabby conjunctiva. In a few minutes the serum was sufficiently drained away to allow the performance of the operation.

The flap was made upwards, and smaller than in ordinary cases, for the lens seemed small, and it was evident that the vitreous must escape as the knife was withdrawn. There being no anterior chamber, it was necessary to pass the knife through the iris and lens. As was expected, the vitreous in a partly fluid condition followed the knife, and filled up the opening in the cornea. The cornea was found to be quite thin, and deficient in elasticity, though the diameter was normal. As the vitreous humor escaped the pupil partly contracted, but the upper part of the iris, including the pupillary margin, was carried back into the liquid vitreous humor against the ciliary body. This was caused by the fact that the vitreous humor followed the knife as it was withdrawn, and getting in front of the iris pressed it backwards thus, preventing it from passing into the corneal opening. The vitreous being to a great extent liquified and escaping, it was of course difficult to get the lens to move towards the corneal opening; besides it had already been displaced somewhat downward by the escaping vitreous. Instead of making the usual manipulations for extracting the lens, which would only have increased the flow of the vitreous humor, gentle pressure was used on the cornea from below upwards, which gradually approached the lens to the corneal opening, when it was seized by an assistant, and removed without difficulty, and with but little additional loss of vitreous. Not more than a fourth of the vitreous escaped during the operation. The perfect apposition of the lips of the wound was everywhere prevented by the presence of the more solid portions of the vitreous; still there was but slight separation, on account of the small amount of solid vitreous. The lids were closed by means of strips of adhesive plaster, and a soft compress and bandage were applied, so that uniform and gentle pressure was exerted upon the eye.

The dressings were removed sufficiently on the second day for the purpose of using a solution of the sulphate of atropia. On the third day the eye was examined, and it was found that

though the wound was closed the uniting material was much stretched by the internal pressure which had partially forced the iris against the wound. The next day I opened the wound at about the centre, and evacuated a small quantity of vitreous; but failed in seizing any portion of the iris, which sank back when the vitreous escaped. The imperfect application of the lips of the wound caused a transverse fold in the cornea, running from one extremity of the wound to the other, in a straight line. After the operation all symptoms of active inflammation subsided. The patient was very restless, and several times removed the dressings from the eye. Gradually the cicatrization of the wound was completed, so that after about two months he left the hospital, with very good sight, and but slight remaining irritation of the eye. The pupil was displaced upwards, and was of the shape of a half moon.

Remarks.—The capsule of the lens had been ruptured by the blow upon the eye, and the slow development of the inflammation under such circumstances was an additional proof that the lens was cataractous at the time the injury was received. It is well known to ophthalmic surgeons that the *contact* of the *normal* lens substance is a source of great irritation to the iris. Even the cortical substance of a *ripe* cataract, when left in the anterior chamber, is often the cause of iritis after cataract extraction. Another great danger from dislocation of the lens into the anterior chamber, with the *escape* from the *capsule*, is the *swelling* of the lens substance, by imbibition of aqueous humor. The too rapid imbibition of aqueous humor is the principal source of danger in the operation for cataract by discision, the swelling of the lens substance (cortical) causing increased tension of the eyeball (increased intra-ocular pressure) and inflammation. If the imbibition is very rapid, it may lead to total destruction of the eye, unless the lens substance should be removed by operation. In the case just given, notwithstanding the trauma and the rupture of the capsule, with dislocation of the lens, the inflammation up to the tenth day was very slight. Had there been a normal cortical substance this could not have been the case. The lens was of an amber color, and in addition the cortical substance small in quantity, but little changed by contact with the aqueous

humor, and presented nothing to distinguish it from the soft cortical substance of a completely ripe cataract.

For the above reasons it is almost certain that cataract previously existed, and that this case cannot be considered to be one of traumatic cataract, and should not influence the formation of an opinion as to the dangers of such an accident. In such a case the indication is for immediate operation.

CASE 2.—*Internal Strabismus*.—L. F., fourteen years old. When three or four years old his eyes began to become crossed. An exact history was not to be obtained. The right eye alone was affected. The degree of the strabismus was about three and a half lines. When the left eye was covered, and the patient was directed to look as far as possible to the right, the motion outwards was almost perfect, and about equal to that of the left eye. As a rule, the motion outwards of the affected is less than that of the unaffected eye. The accommodative movements were normal. The sight of the eye was reduced to reading No. 10 of Yaeger's text print. The eyes both departed from the normal refractive standard, so that it required convex lenses of thirty inch focus before the eyes in order to place them under optical conditions *similar* to those of normal eyes. The normal refractive standard is assumed to be the power to unite parallel rays of light upon the retina when the accommodative power of the eye is in a passive state.

The patient was placed under the influence of chloroform, and operated upon in the following manner:

An opening of about two lines in length immediately over the insertion of the rectus internus was made. The posterior margin of the wound was seized with the forceps and distended, so that the conjunctiva could be dissected with a pair of sharp-pointed scissors from the eye-ball, as far down as the semilunar fold. The tendon of the muscle was then seized with a strabismus hook, and divided close to its insertion into the sclerotic coat. The division was perfectly made, so as to get the full effect of the operation. The conjunctival wound was then closed by a single suture.

The deformity was corrected, and in an hour after the patient could *see better* with the eye operated on. In the course of a few

weeks the sight of the affected eye was almost as perfect as that of the other. There was hardly a trace of the operation, and the deformity was entirely cured.

Remarks.—This case is introduced in order to call attention to the importance of operating early in cases of strabismus. It belonged to the most favorable class, and the surgeon could run no risk in promising an almost perfect result, provided the operation was properly performed. It is, as a rule, unsafe to allow a case to remain without operation as long as this did. I have recently operated on a case in which the sight had been much more injured and remained without improvement, notwithstanding the patient was about the same age, and the case did not differ essentially from the one just described, except that binocular vision was no longer possible, even when prisms were used. The closest examination led to the discovery of no other cause for the strabismus, than the deficiency in the refractive power of the eyes. It is true that many cases are observed in which this imperfection exists in a high degree without causing strabismus, still so large a proportion of cases of strabismus internus are affected in the way that we are justified in the assumption that this is the cause. The degree of this imperfection causing strabismus internus is not a fixed one, consequently there must be in this class of cases some other influencing cause or causes, which most probably are to be sought for in the internal and external muscles of the eye, in irregular refraction of light, or in some defect in the anatomical relations of the retina.

CASE 3.—*Iritis; Treatment and Cure without use of Internal Remedies.*—D. D., sailor, aged thirty-one years. The patient said that he had had a syphilitic skin disease about five years since. About 14 months since he had rheumatic pains in his shoulders and hips. His clavicles were "sore" at the time. For twelve months past he has had a slight redness of the right eye, but never had a decided inflammation till about a week ago. At that time he had a pain in the ball, especially when moved suddenly. Looking downwards was particularly painful. The pain was not constant. When he presented himself for treatment, he was suffering from severe throbbing nocturnal pain in the eye and photophobia. There was at intervals some pain during the day also. The upper

eyelid was somewhat swollen, especially towards the lower part, and the patient could hardly raise it. There was a free flow of tears with some mucus. The palpebral conjunctiva was of such an uniform scarlet red, that one not experienced in the diagnosis of eye diseases might well have supposed the case to have been one of catarrhal conjunctivitis. The whole ocular conjunctiva was red, but the redness increased in intensity from the conjunctival cul de sacs up to the margin of the cornea. The usual zone of sub-conjunctival injection around the cornea was present, but was partially masked by the conjunctival injection which was most intense in the same zone. The cornea was perfectly healthy. The iris was changed from blue to a decided green color. The pupil was contracted and motionless. The iris was somewhat swollen throughout. The aqueous humor was slightly turbid, but there was no plastic exudation into the pupil. For thirty-six hours the dilatation of the pupil by the use of the sulphate of atropia was imperfect, but gradually increasing. Its use for the first hour produced about one-fourth the normal effect.

The sight was very much affected, the patient seeing every object as though in a dense fog. The treatment was commenced by the simple use of a solution of the sulphate of atropia, dropping one or two drops into the eye every three hours, and the rubbing into the temple of a small quantity of mercurial and beladonna ointment twice a day. The next morning after the treatment was commenced, the pupil was found to be dilated to about one-third of its capacity, but remained *perfectly* circular, which was the only decidedly favorable symptom in the case. After the first twenty-four hours there was no more pain. In three or four days the pupil was perfectly dilated, and all the symptoms improving rapidly.

At the end of nine days the patient left to join his ship. The inflammation had almost entirely subsided, and the sight was restored to nearly the normal standard, allowing for the effect of the sulphate of atropia on the sight.

Remarks.—Although this was a severe case of iritis and had existed for a week, still the absence of plastic exudation into the pupil, and the fact that the ciliary body and the choroid were not involved, were considered to be sufficient reasons for omitting the use of

mercury. Though the atropia only attained its maximum effect after about three days, still the pupil remained *circular* from the first. Had the dilatation been irregular, I should not have hesitated to use mercury. Had it not dilated at all or not reached a high point of dilatation in a reasonably short time, mercury would have been indicated also. Had there been any other manifestation of syphilis it would have been proper to give a mild course of mercury, having due reference to the bad condition of the patient's health. The cause of the iritis in this case was obscure, and though the evidence was in favor of a syphilitic origin, its history did not coincide well with what is absolutely known of syphilitic iritis.

CASE 4.—*Keratitis and Iritis*.—H. R., thirty-five years old, presented himself at the clinic for treatment on the 25th November, 1867. Two months before he had had a severe attack of yellow fever. He had a relapse and was confined to the house for a month. About the 1st of November his left eye began to be sensitive when exposed to light or air. His eye became red and there was an excessive secretion of tears. He had at that time some pain, which he thought to be on the inner surface of the upper lid. There was no circumorbital pain. About two weeks since the sight began to be affected. When he presented himself for treatment, there was a moderate degree of catarrhal conjunctivitis, and some superficial ulceration of the outer and lower part of cornea, which extended to about its middle. The ulceration amounted over a part of the surface to a simple abrasion of the epithelium. The ulcerated surface of the cornea was somewhat vascular. There was present the usual zone of redness around the cornea, with a preponderance of the conjunctival over the subconjunctival redness. The cornea was slightly hazy for some distance around the ulcerated surface. The aqueous humor was turbid and the iris changed in color and swollen. The sight was much affected, the patient only being able to count fingers at twelve or fourteen feet. There were considerable pain (circumorbital) and photophobia. To the above symptoms are to be added the usual symptoms of a mild chronic catarrhal conjunctivitis.

There had been no medical treatment used. The patient's

“landlord” had prescribed a wash of “lead and zinc” which had caused a moderate deposit of lead in the ulcerated cornea.

The extent of the affection of the iris was revealed by the use of atropia. At least half of the pupillary margin was found to be adherent to the capsule of the lens, and it was evident that the exudations were of such strength that they could not be broken up by medical treatment.

The patient was broken in health, and it was thought advisable not to use mercury internally. The internal treatment was limited to the use of vegetable tonics. A few drops of a solution of the sulphate of atropia were poured into the eye every three hours, and mercurial and belladonna ointment rubbed into the temple. The eye was well shaded and the patient kept quiet. In two days all pain had ceased, and the violence of the disease had begun to subside. In about a month he commenced work again by gas light, which caused a relapse which was soon relieved. After the violent symptoms of the disease had ceased, which was in a few days after the commencement of the treatment, I applied a weak solution of the nitrate of silver to the palpebral conjunctiva. This seemingly irritant treatment, by controlling the catarrhal symptoms, improved the general condition of the eye.

Remarks.—It was impossible to discover any cause for the iritis except the corneal trouble, which in the broken down condition of the patient's health was in my opinion sufficient to account for its existence. The patient had been previously healthy and had never had an attack of rheumatism or syphilis. It is not uncommon to see cases of superficial affection of the cornea, if extensive, result in iritis, especially where the health has been broken by fever. Shortly after he came to me, the other eye became affected with slight catarrhal conjunctivitis, but the cornea and iris remained unaffected. As a rule the iris does not become implicated except the ulceration be deep or extensive; here the ulceration was not deep but there was probably implication of the deeper layers of the cornea in the inflammatory process. It was noted that the inflammation of the iris and its adhesions to the capsule of the lens were most marked at that part corresponding to the corneal disease. It was evidently one of those cases

which, if neglected or mistreated, result in the formation of hypopyon. The pus in the great majority of cases comes from the cornea (posterior surface of) and not from the iris as many suppose. In fact I have known pus to form in the anterior chamber before there was a marked participation of the iris, and in one case but little reaction on the part of the iris while the pus remained. The excision of a portion of the iris was proposed to the patient at the close of the medical treatment. This was not to admit light, for the cornea immediately over the pupil had cleared, the pupil itself was free, and the sight was very good. It has been observed, however, that if extensive and permanent adhesion take place between the iris and lens capsule, the acute disease terminates in chronic iritis or irido-choroiditis, which diseases in a large majority of cases terminate in the permanent injury or loss of the eye. The patient was relieved of the attack but declined the operation.

CASE 5th.—*Keratitis and Iritis*.—This patient was a child of four years old, small for his age, and quite pale and thin. He had been suffering for some time with an undecided form of intermittent fever of the quotidian type. The cold stage of the fever was but slightly marked. The child was very restless, especially at night, when it slept very little. When it was brought to the clinic, the left eye was affected with mild catarrhal conjunctivitis, and a superficial and moderately large ulceration of the upper part of the cornea. The corneal tissue for a considerable distance around the ulceration was slightly infiltrated and moderately opaque. The cornea in the same area seemed slightly distended, as though its tissue had been softened by the inflammatory process. The ulcerated surface had a dirty greyish macerated appearance. The iris was congested and the aqueous slightly turbid. In a couple of days after the child was brought to the clinic a small quantity of pus was observed at the lower part of the anterior chamber. Previous to the appearance of the pus in the anterior chamber, the iritis was slight, but now became the most prominent and important feature in the case.

The treatment consisted in the use of quinine, with reference to the fever at first, and subsequently as a simple tonic. A solution of the sulphate of atropia was used from the first. When the iritis

became marked the use of small doses of calomel repeated five or six times a day was added to the treatment. After several days the fever was entirely broken, but the child, though improved in health, did not regain strength as was desirable. Worms being suspected a vermifuge was administered. The following day they were passed in large quantities. This treatment was repeated two or three times and with benefit to the condition of the child. Shortly after it had an attack of dysentery, the treatment for which caused it to pass a considerable quantity of worms again. The condition of the patient's health and the variety of affections of the eye made the prognosis extremely doubtful. In spite of the greatest care the disease advanced in intensity for at least ten days, but then gradually yielded, and after six weeks no trace was left, except a nebulous opacity of the upper part of the cornea. The pus remained in the anterior chamber, pretty much as first seen, for two weeks, and then gradually disappeared. As soon as the iris dilated tolerably well from the use of the atropia, the mercury was discontinued.

Remarks.—This like Case 4, illustrates the danger of a seemingly unimportant affection of the cornea becoming complicated by iritis in certain conditions of health. It is highly probable that in both these cases the disease of the conjunctiva was the commencing trouble, and that the corneal disease was a consequence of it, as the iritis was the result of the inflammation of the cornea. It was found beneficial now and then to touch the palpebral conjunctiva with a weak solution of the nitrate of silver, even when the pus was still present in the anterior chamber. Ordinarily, of course, this would only increase the iritis, but here the corneal affection being the source of irritation to the iris, any thing which would diminish the former would in all probability benefit the latter. Of course this practice is only recommended in cases where the conjunctival disease is the starting point, and its continuance evidently increases the dangers of the case. The greatest caution in its use is therefore recommended. In all affections of the cornea where there is the slightest suspicion of a participation of the iris in the disease, the sulphate of atropia is absolutely indicated. The presence of a very moderate amount of pus in the anterior chamber does not demand a change

of treatment. Should the amount be very great and increasing, the indication is to evacuate it through an opening in the cornea. If the operation be performed when there is but a small accumulation of pus, it is generally unnecessary and may be very pernicious. Only one case has presented itself at the clinic, since it was established, in which the operation for the removal of the pus was indicated. As a rule the appropriate treatment for the diseases of the cornea and iris will lead to its absorption.

ART. XII.—*Chemical Examination in a case of Fatal Poisoning by Stramonium*: By J. W. MALLET, Ph. D., M. D., Professor of Chemistry, University of Louisiana.

IN the early part of March of the present year, a box was received at the chemical laboratory of the Medical Department, University of Louisiana, sent from Mississippi, by Dr. R. J. Durr, of that State, and containing a sealed bottle, in which were the stomach and its contents of a young man supposed to have died from the effects of poison.

The accompanying letter requested a chemical examination, stating that no distinct clue to the nature of the poison used (if there had been any) could be given; that the young man in question had assisted in getting up a party, arrived late at the house at which the party was given, and was served with supper—which was saved for him—apart from the other guests; that he felt no sickness until about an hour after supper, when, as he was dancing, he felt sick, went out upon the gallery, vomited, and complained of headache—it is said that the pupils of his eyes were dilated, this fact not ascertained by the physician himself—that shortly afterwards the patient fell into a stupor, went to sleep, and was not noticed till after midnight, when, being aroused to go home, he was almost unconscious, with a slow, full and labored pulse. He died the next morning about nine o'clock. No mental excitement had been noticed, the patient passing into a semi-comatose condition as soon as affected by the poison, and ceasing to be rational after three or four hours. He was described as having been “limber,” and in a cold, clammy perspiration. There had been no purging, but vomiting had continued

for some time. There had been no complete post-mortem examination; the stomach and part of the duodenum had simply been removed and put aside for examination.

The stomach was opened, and found to contain nothing but a small quantity of a tolerably liquid reddish-brown matter resembling coffee grounds. There was no clearly marked morbid appearance about the inner surface of the organ itself.

The stomach, cut into fragments, and the contents were separately examined by the method proposed by Stas, namely, treatment with water and alcohol successively, with the addition of a few drops of sulphuric acid, evaporation at a very gentle heat over a water bath, digestion of the dried residues with water, and, after filtration and the addition of caustic potash enough to produce alkaline reaction, agitation of the aqueous solution with ether. In one experiment ether alone was used as the final solvent, in another a mixture of ether and chloroform.

A residue was left from the spontaneous evaporation of the ethereal solution, in clearly recognizable quantity (probably $\frac{1}{3}$ or $\frac{1}{2}$ grain) from the contents of the stomach—in traces only from the stomach itself. This residue crystallized readily upon a glass slide, and under the microscope presented the appearance of minute prisms, aggregated together in pennate and stellate groups. It could easily be redissolved and recrystallized. A minute particle placed upon the tongue gave rise to a well-marked bitter taste. Dissolved in water it produced a distinct alkaline reaction with reddened litmus paper. Its aqueous solution gave precipitates with tannic acid and mercurio-iodide of potassium. Nitric acid produced no marked coloration; sulphuric acid a red coloration, verging rather upon orange than rose-color, but the quantity used was not sufficient for any distinct observation.

Dr. Pope, in charge of the eye and ear clinic of the University, was kind enough to make a careful experiment as to the effect of this substance upon the eye. After noticing that the pupils of the writer's eyes were of equal size when similarly exposed to light, a very minute portion of the residue from the evaporation of the solution in ether was introduced beneath the lid of one eye, and the result was awaited in a partially darkened room. In about half an hour distinct and strongly marked dilatation of the pupil was produced; a fact verified by Drs. Stone, Pope,

Hawthorn and others. The power of accommodation of the eye to varying distances was interfered with, but to a small extent only. In three or four hours all effect upon the eye had passed away.

As the result of the above experiments, it was considered as proved beyond doubt that the stomach examined did really contain a poisonous alkaloid of the atropine group. It appeared most probable that this alkaloid was either atropine itself or daturine, and the latter seemed to be pointed to more particularly by—;

1st. The readiness with which the substance found could be crystallized, atropine being notoriously of difficult crystallization.

2d. The short duration of the effect upon the pupil of the eye, though this was so strongly marked while it lasted. It is stated in Bouchardat's *Annuaire de Thérapeutique* for 1864, p. 24, as the main result of a comparison of the physiological effects of daturine and atropine (believed by most authorities to be chemically the same) that the general action of the former poison is more intense and less persistent than that of the latter, and as regards the eye, that daturine dilates the pupil more rapidly than atropine, but the dilation does not last so long.

3d.—The fact that *datura stramonium* or "Jamestown Weed" is well known to negroes as a poison, is everywhere accessible to them, and is used by them for criminal purposes—while *belladonna* in any form is much less known and procurable.

Suspicion had been directed to negroes in this case.

A report, stating these results in form for legal use, was forwarded to Mississippi.

Since then a letter has been received from Dr. Durr, confirmatory of the conclusions arrived at. He states that a negro man and woman had been arrested on suspicion of their having been guilty of the act of poisoning, and that they had confessed to having used *stramonium*.

Memoranda with reference to preparation of Perchloric Acid and Perchlorates for medicinal use.

The very large proportion of oxygen contained in perchloric acid, and the remarkable stability presented by this substance and the salts which it forms, suggested the idea of examining the therapeutic effects which might be obtained by means of them.

This idea occurred without a knowledge of anything having previously been attempted in the same direction, although it must be confessed that no special search was made in medical literature with reference to the point.

The substances prepared were, the acid itself, and its compounds with potash, sesqui-oxide of iron, bismuth and quinine.

Perchlorate of potash was first formed, by heating successive portions of chlorate of potash in a large porcelain crucible over a gas lamp, raising the temperature gradually until the melted salt began to give off oxygen freely, then maintaining steadily the same degree of heat as long as effervescence continued. The residual mass was crushed, washed moderately with cold water, dissolved in boiling water, crystallized by tolerably rapid cooling, and purified by two or three rapid crystallizations. As thus obtained, the salt was supplied to Dr. S. M. Bemiss for trial in the wards of the Charity Hospital, any possible danger from its use having been guarded against by preliminary experiments with large doses administered to the lower animals.

For the purpose of preparing perchloric acid in the free state the perchlorate of potash was carefully distilled, in small quantities at a time, with sulphuric acid diluted with but little water. A portion of the perchloric acid underwent decomposition, but the greater part was collected, in a tolerably concentrated form. Its exact strength was not determined, but that which was prepared for trial in the hospital was diluted until it could be borne in small quantity in the mouth, but had a very strong sour taste.

For perchlorate of iron, the sesqui-chloride of the metal was precipitated by a slight excess of ammonia, the hydrated sesqui-oxide of iron was washed twice or thrice by decantation, and was then added to somewhat diluted aqueous perchloric acid as long as it was dissolved. The solution was filtered and preserved for use.

The perchlorates of bismuth and quinine were prepared in a similar way, using the precipitated hydrated oxide of bismuth and freshly precipitated quinine respectively.

It was intended to use these solutions merely for the purpose of ascertaining whether *any* distinct therapeutic effect could be obtained from them, and, if so, its general nature. It was proposed,

in case these first experiments furnished any encouragement to proceed, to prepare several other compounds of perchloric acid, to try different forms and vehicles of administration, and especially to note the precise quantitative composition of the different salts and the strength of the solutions used, so that there should be some precision in the doses employed. The writer was obliged to leave these experiments incomplete on leaving New Orleans at the close of the session.

The following statements bearing on this matter have since been noticed as already on record :

Bödecker, in 1849, prepared the perchlorates and per-iodates of several of the alkaloids, including the per-chlorates of quinine and cinchonine. Their chemical characters were described by him, and their crystalline forms by Dauber ; but no allusion was made to their physiological action.—*Ann d. Chem. u. Pharm.*, 71-59.

Recently, the *chlorate* of quinine has been prepared, at the request of Dr. Lyons, for some experiments performed at the Whitworth Hospital, Dublin, in connexion with two or three cases of "black death." It is said to have been since employed by that gentleman with great success as a new febrifuge, reference being made to Dr. Lyons' clinic (*Medical Press and Circular*, vol. 1, p. 653). Mr. Chas. R. C. Tichborne described, in a paper read before the British Pharmaceutical Conference, the method of preparation and chemical properties of this salt, and stated the results of its analysis. He remarks, that "for the internal administration of this salt it is soluble enough in water (probably the most efficacious method of exhibiting it). It is incompatible with the mineral acids, as they form the ordinary salts of quinine ; it is for this reason that Dr. Lyons has hitherto prescribed it in conjunction with *perchloric acid*, itself a valuable oxidizer,—*Chemical News*, No. 35, (Sept. 7, 1866,) p. 111.

ADDENDUM.—The medicines whose mode of preparation Prof. Mallet has described, were not used in a sufficient number of cases to justify any conclusions, based upon actual observation, in respect to their therapeutic value.

Perchlorate of potash was given in from five to ten grain doses, dissolved in water, thrice daily. It was prescribed for sub acute rheumatism, and for one case of anæmia, with enlarged spleen.

Perchloric acid was given in fifteen grain doses; in sweetened water or infusion of a vegetable bitter, three times daily, for about one week, to the patient with lardaceous liver and to a patient with anorexia and malarial cachexia for about the same time. Pepsine could not be procured, and this medicine was used to meet the deficiency.

Perchlorate of iron was given in doses of $\overline{3}ss$ to $\overline{3}i$, thrice daily, to two cases of anæmia from malarial influence.

Perchlorate of bismuth was given in doses of ten to fifteen drops, in diarrhœa and dyspepsia.

Perchlorate of quinine was given in $\overline{3}i$ doses, thrice daily, to several cases of inveterate chill and fever.

The most marked good results were obtained from the perchlorate of bismuth, perchlorate of quinine and perchlorate of iron, respectively mentioned in the order of their apparent value. In the publication of 1869 it is hoped that the joint experience of our Faculty may authorize the announcement of more definite conclusions in regard to the value of these preparations.

S. M. BEMISS.



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